Weber Construction and Demolition Debris Disposal Site

Landfill
Permit Application

Warren Construction Services Inc,
2150 west 3300 south
Ogden, Utah 84401

Telephone (801)-731-0378

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF SOLID AND HAZARDOUS WASTE

APPLICATION FOR A PERMIT TO OPERATE A CLASS VI LANDFILL

The applicant shall submit, in duplicate, an original permit application, a general report, and a technical report to:

Dennis R. Downs, Director
Division of Solid and Hazardous Waste
Utah Department of Environmental Quality
PO Box 144880
Salt Lake City, Utah 84114-4880

PART I – GENERAL INFORMATION

1. Name of Facility----------Weber Construction and Demolition Debris Disposal Site

2. Site Location----------1650 West 3300 South Weber County, Utah

3. Facility Owner----------Warren Construction Services Inc.

4. Facility Operator----------Warren Construction Services Inc.

5. Contact Person----------Brent Warren

   Address: 2150 West 3300 South
   Ogden, Utah 84401

   Telephone: (801)- 731-0378

6. Type of Facility----------Class VI Landfill Construction and Demolition Only

7. Type of Application----------Initial Application

8. Property Owner----------Some parcels to be purchased by applicant

Note: We will have closed by time of application approval.

9. Certification of Submitted Information.

Brent Warren, Owner
(Name of Official) (Title)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Signature Brent Warren Date 8/11/03

SUBSCRIBED AND SWORN to before This 11 day of August, 2003.

My commission expires on the 7th day of May, 2003.

Wendy Eisenmann.
Notary public in and for

NOTARY PUBLIC
WENDY EISENMANN
5201 South 1900 West
Roy, Utah 84067
My Commission Expires
May 7, 2007
STATE OF UTAH

(SEAL) _____ County, Utah.

Weber Construction and Demolition Debris Disposal Site

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subsequent to being treated, stored, or disposed of at the site or facility will not present a hazard to public health or the environment.

3.4 Evidence that the personnel employed at the facility or site have education and training for the safe and adequate handling of non-hazardous solid or hazardous waste.

3.5 Plans, specifications, and other information that the executive secretary considers relevant to determine whether the proposed non-hazardous or hazardous waste operation plan will comply with this part and the rules of the board.

3.6 Compliance Schedules, where applicable, including schedules for corrective action or other response measures for releases from any solid waste management unit at the facilities regardless of the time the waste was placed at the unit.

3.7 Evidence that the proposed commercial facility has a proven market of non-hazardous solid or hazardous waste.

3.8 A description of the public benefits of the facility.

3.9 Compliance history of an owner or operator of a proposed commercial non-hazardous solid or hazardous waste treatment, storage or disposal facility, which may be applied by the executive secretary in a non-hazardous solid or hazardous waste operation plan decision, including any plan conditions.

4.0 Maps

4.1 Topographical map drawn to the required scale with Contours showing the boundaries of the landfill unit. Ground water monitoring well locations, gas Monitoring points, and the borrow and fill areas.

4.2 Most recent U.S. Geological Survey Topographic Map, 7-1/2 minute series, showing the waste facility Boundaries: the property boundary: surface drainage channels: any existing utilities and structures within one-fourth mile of site: and the direction of prevailing wind.

5.0 Geological Assessment

5.1 Local and regional geology and hydrology including faults, unstable slopes and subsidence areas on site.

5.2 Evaluation of bedrock and soil types and soil properties.

5.3 Depth to ground water.

5.4 Direction and flow rate of groundwater.

5.5 Quantity, location, and construction of any private or public wells on site or within 2000 feet of the facility boundary.

5.6 Tabulation of all water rights for ground water within 2000 feet of the facility boundary.

5.7 Identification and description on all surface waters on site and within one mile of the facility boundary.

5.8 Background ground water and surface water assessment and, for an existing facility, identification of impacts upon ground water and surface water from leachate discharges.

5.9 Calculations of water site balance.

6.0 Engineering Report- Plans, Specifications, and Calculations

6.1 How the facility meets the location standards of R315-302-1 Including documentation of any demonstration made with Respect to any location standard.

6.2 The basis for calculating the facility life.

6.3 Cell design to include liner design, cover design, fill methods, Elevation of final cover including plans and drawings signed And sealed by a professional engineer registered in the state of Utah.

6.4 Equipment requirements and availability.

6.5 Identification of borrow sources for daily and final cover and for liners.

6.6 Run-off or leachate collection, treatment, and disposal and documentation to show that any treatment system is being or has been reviewed by the division of water quality.

6.7 Ground water monitoring plan that meets the requirements of R315-308 including well locations, design, and construction.

6.8 Landfill gas monitoring and control plan.

6.9 Design and location of run on and run off control systems.

7.0 Closure Plan

7.1 Closure schedule.

7.2 Design of final cover.

7.3 Capacity of site in volume and tonnage.

7.4 Final inspection by regulatory agencies.

8.0 Post-Closure Plan

8.1 Site Monitoring.

8.2 Changes to record of title.

8.3 Maintenance activities.

8.4 Contact name, address and telephone number.

9.0 Financial assurance

9.1 Identification of closure costs.

9.2 Identification of post closure costs.

9.3 Identification of financial assurance mechanism.

Part II
General Report

1.0 INTRODUCTION

1.1 General Information

1.1.2 Name, owner, address etc. See part 1, page 1

1.2 Facility Information

The proposed Weber Construction and Demolition Debris Landfill will be located in Weber County and will serve mainly Weber, Box Elder, and Davis Counties. The facility will be set up to receive yard waste and construction and demolition debris only. Further contained in this section is additional information regarding the facility description and location, ownership, land use and Zoning area served by facility and the characteristics of the waste stream.

1.3 Legal

1.3.1 Legal description

We are in the process of purchasing this property. There will be a combination of three parcels partially combined to make up phases 1 & 2 on the site. The land descriptions and plat maps are as follows:

See Appendix (A)

1.3.2 Proof of ownership

Proof of ownership of parcels A, B & C in Appendix A will be supplied after land closing.

1.3.3 Lease Agreement or other mechanism

Not Applicable, Property to be purchased

1.3.4 Latitude and Longitude of the site
Lat: 41* 11' 58" Long: 112* 01' 25"

1.3.5 Land use and zoning of the surrounding areas

The current zoning on proposed site is M1. We are in the process of getting a zoning change

This is a description of the land use and zoning of the surrounding area:

Different land uses and zoning surrounds the proposed Weber Construction and Demolition Debris Landfill. Land to the East is part of Ogden City and is mostly commercial with the closest property being zoned M1. To the north of the site is part of Weber County and is farm ground. Farther on north is the commercially zoned Ogden City Industrial park. The property to the west is part of Roy City and is mostly farm ground that has just been rezoned manufacturing. Land along the south of property is part of Ogden City and is the Ogden Airport. To the Southwest quite a distance away are a trailer park and a residential neighborhood, non-of which is in sight of the proposed Weber construction Debris and Demolition Landfill.
See Ariel Picture in Appendix (B)

1.4 Facility Description

The proposed Class VI Weber Construction and Demolition Debris landfill is located in central Weber County surrounded by County land and the cites of Ogden, Roy, and West Haven. The Facility will be located on approximately 54 acres of land. Consisting of Phases #1 & #2. We are in process of getting zoning changes necessary in County and State regulations. The site will be located in conjunction with abandoned sand/gravel pit (See appendix (C)) and will be below surrounding road grades on south and west sides and expanding outward (North) from southern existing hill and filling a natural depression. The property will be fenced as needed with a privacy fence to help block visibility of operations. There are trees on other parts of property to also restrict visibility of site. The landfill will be covered and seeded as we progress to keep the actual operating portion of the site as small as possible.

The Weber Construction and Demolition Debris Landfill will provide a waste disposal site for businesses and residence residing in Weber, Box Elder and Davis counties as well as the combined cities located in each. There is at present only one such Class VI facility in the area and this facility is scheduled to be at

capacity and closed within two years. There is at this time no alternate site being considered. **Weber County needs a new construction debris site.**
The Weber Construction and Demolition Debris Landfill will be operated in accordance with the guide lines set forth in the SOLID WASTE RULES and will be run as described in the enclosed Plan Of Operation. Waste accepted for disposal will be yard waste and construction and demolition waste comprised mainly of wood, cardboard, wallboard, and any and all waste that meets the requirements of the UAC SECTIONS R315-301-2 (16)(36). Waste Not accepted include, but not limited to, municipal, industrial, and medical waste, hazardous wastes, liquids, used oils, contaminated soils, dead animals, and tires. Before being allowed to use the facility, the site attendant will check each incoming load. A receipt, which states cost, weight, date and time will be given to the driver of the vehicle. Expected tonnage is approximately 750 to 1500 ton per day at end first year.

2.0 OPERATING PLAN

The Weber Construction and Demolition Debris Landfill will be operating as per the following plan of operation for a CLASS VI LANDFILL FACILITY as required by UAC R315-310-3 ((1)(E)) and R315-302-2 (2). This plan of operation presents the intended schedule of construction; a description of on site waste handling procedures; a schedule of inspections and maintenance; contingency plans in the event of fire or explosion; a plan to control dust; procedures for controlling disease vectors; general training and safety programs; and other information concerning the operation of the facility.

2.1 Schedule of construction

The Weber Construction and Demolition Debris Landfill will have Two phases and use a cell method of operation which will consist of 7 cells #1 through #7.
The estimated time frame for the permitting process and the requirement of passing a joint resolution in the legislature, and the signing of the resolution by the governor will allow construction to begin between 7/2003 and 7/2004.
The excavation and preparation of the #1 cell and misc. road construction will take approx. one month. While the first cell is being completed Fences, scales and scale building will be installed. Dirt from cell #2 Will be used for redemption and the closing of cell #1 and so on.

2.2 Description of on site waste handling

The plan of operation specifies that a description of on-site waste handling Procedures be provided (R315-302-2 (2)(b)). Waste accepted for disposal

will be yard waste and construction and demolition waste comprised mainly of wood, cardboard, wall board, and any and all waste that meets the requirements of the UAC SECTIONS R315-301-2 (16) and R315-301-2 (36). Excluded wastes include, but not limited to, municipal, industrial, and medical wastes, liquids, used oils, contaminated soil, dead animals, and tires. Each incoming load will be inspected and weighed at site entrance by landfill personnel. All weights and description of loads will be recorded on a daily log and entered into long term operating records.

2.2.1 Construction and Demolition Waste

Construction and Demolition waste generally consists of wood products, brick, cement, rock, wallboard, etc. All deposited debris will be disposed of on or near the active disposal face. The waste will then be mixed, pushed into the active pit and covered with dirt layer.

2.2.2 Yard Waste

Yard waste consists of vegetative waste such as grass clippings, straw and hay, and other "yard" debris. Yard wastes will be disposed of the same as C & D debris.

2.3 Inspection and Monitoring

A brief visual inspection of equipment and the facility will be done daily. All problems found which threaten human health or environment quality will be noted and fixed immediately. All other findings of these brief visual inspections will be fixed in a timely manner.
A thorough inspection of the whole facility will be done quarterly. Its findings will be logged and any and all corrective action will be noted. (See Appendix D)

2.4+- Fire and Explosion

Facility personnel will be prepared for immediate fire suppression in the event of a fire involving the waste. Fire extinguishers are mounted on equipment. On-site cover fill will be used to cover the known fire or smoldering areas. Water will be applied to the affected areas only as a last resort, thus to minimize water to waste contact. In the event that the on-site personnel can not manage the fire because of its size or a dangerous

condition is evident, the Weber County Fire Department Dispatch will be notified. There are fire stations located in surrounding cities. The closest is in Roy City 2 miles away. Response time is estimated at 5 min. The responding Fire Department will then take responsibility for fire suppression and extinguishing.

2.5 Groundwater Contamination

The Weber Construction and Demolition Landfill will be a Class VI construction and demolition only facility. Because of the nature of the waste that will be accepted by the facility no toxic or water pollutants will be handled. Thus, no ground water monitoring is required for this application. Surface water will be addressed by the inclusion of earthen berms on each side of the active cut. Thus, no precipitation that falls onto the active face can flow out as surface water. The earthen berms also will stop precipitation that falls outside of the active area to flow in as surface water.

2.6 Failure of Systems

If the daily visual inspections or the quarterly thorough inspections find any run off collection systems have been compromised, then the problem areas will be addressed immediately. The problem areas will be inspected and their failures will be noted and logged. A plan will then be implemented which will include an examination of the cause; an appropriate repair; and preventative measures to insure the failure is not repeated.

2.7 Fugitive Dust

We expect that dust can be a problem from May through October, as these are the driest times of the calendar year. The soil of the site consists mainly of sandy loam and/or Borrow. When dust is created by the excavation, construction, and general operations of the facility, which we plan to minimize as much as possible. A water truck will be employed to wet the soil and keep it damp. We may limit construction activity, when feasible, due to high winds or conditions exist which may exaggerate the problem.

2.8 Maintenance of Equipment

All on-site equipment will be included in the daily visual and quarterly inspections. Any repair or maintenance will be noted and scheduled. All on-site equipment will be maintained as per manufacture recommendations. Any repair and maintenance that can be performed by facility personnel will be performed on-site following manufactures recommendations. Qualified technicians that have the proper training and experience will perform all major repair and maintenance. This major repair and maintenance may be performed on-site or off-site, depending on the type of repair and maintenance, date of maintenance, personnel, and any needs of the equipment can be noted for future reference.

2.9 Prohibited Waste Exclusion Plan

Wastes which are prohibited from disposal at the Weber Construction and Demolition Landfill include, but not limited to, municipal, industrial, and medical wastes, hazardous wastes, liquids, used oils, contaminated soils, dead animals, and tires. Pursuant to UAC R315-303-4(7), an owner or operator of a solid waste disposal facility shall not knowingly dispose, treat, store, or otherwise handle hazardous waste or waste containing PCB's. An owner or operator of a solid waste disposal facility shall include and implement, as part of the plan of operation, a plan that will inspect loads or take other steps as approved by the Executive Secretary that will prevent the disposal of prohibited waste containing PCB's (UAC R315-303-4(7)(b). This plan includes random inspections, separate inspection area, training of on-site personnel to identify prohibited waste, and inspection area, training of on-site personnel to identify prohibited waste, and a written record of the inspections signed by the inspector.

2.9.1 Video Surveillance

Video will be taken of all loads entering the facility, and copies kept for one week or longer.

2.9.2 Random Inspections

Trucks using the facility will be subject to random inspections performed by an on-site attendant who will be trained and qualified to identify hazardous waste and waste containing PCB's. Drivers will be notified by the scale house attendant to proceed to the special inspection area. The load will then be discharged in this fenced and signed area. The contents will be spread with a front loader or dozer, and inspected for regulated hazardous waste or

waste containing PCB's. Acceptance of the load will depend on the findings of the following procedures:

- The load will be discharged in the special inspection area. This area will be fenced and signs will be posted as to the function of the area.
- The vehicle and driver will be required to wait until the contents have be properly inspected and verified.
- The contents will be spread out, with special attention not to break or rupture any unknown or unmarked containers, by a front loader or a dozer.
- Any containers, such as 55-gallon drums, that are unmarked or are not easily identifiable will be treated as hazardous waste and will be opened only by trained and qualified personnel.
- If the waste has been inspected and is deemed safe it will then be allowed to be disposed of at the face of the landfill.

If the inspection of the waste determines that it contains hazardous waste or waste-containing PCB's, the inspection area will be immediately closed to the public and on-site personnel. The operator will immediately contact AET Environmental they will then be responsible for the proper management, transport, and care of the waste. If known, the hauler of the waste will be notified that they have transported hazardous waste or waste containing PCB's into the facility.

In addition to the random inspections, the on-site attendant that will operate near the face will have the responsibility to monitor the waste of in-coming loads and to remove any questionable material from the site as to facility guidelines.

2.9.3 Training of Facility Personnel

All facility personnel will be trained to identify suspected hazardous waste or waste containing PCB's using standard labels used to mark said waste. Training will include identification, handling, safety precautions, and documentation requirements. All records of training will be maintained in the facilities operating record.

2.9.4 Written Record of Inspections

Inspections will be recorded on the Random Load Inspection Form (see appendix E). Inspection records will include, but are not

limited to, inspector's name, date and time of inspection, hauler information, truck and driver information, observations of the inspector, results of inspection, description of any questionable materials, and the reason for rejection of the waste.

2.9.5 Notification of the Solid Waste Management Authority

Within 24 hours of the receipt of suspected hazardous or PCB containing waste the operator will notify the Utah Division of Environmental Quality. A record of the notification will be submitted to the Utah Division of Environmental Quality that identifies the date and time of discovery, type of material (if possible), probable hauler, an estimate of the material quantity, and actions proposed for the removal of the material from the facility. A record of the notification will then be entered into the operating record of the facility.

2.10 Controlling Disease Vectors

Weber Construction and Demolition Landfill will be accepting only construction and demolition waste and yard waste. In accepting these wastes we hope to keep any available food source for rodents or wild animals to an absolute minimum. All efforts will be made to keep the debris face compacted and graded to keep the area unacceptable for habitation for rodents and other animals. Smoke devices and sonar techniques will be employed first if a problem is discovered. Lawful Poisons will be the absolute last option attempted.

2.11 Alternative Waste Handling

The Weber Construction and Demolition Landfill plans to be open every day Monday-Friday from 7am-6pm in the winter and 6am-630pm in the summer. Saturdays 7 AM to 12:30 PM.
There will be enough capacity at the site to hold 5 working days worth of material at the expected 750 to 1500 tons per day without having to move any borrow. If a major equipment failure occurs, the facility will replace the damaged equipment with a rental or lease machine within 1 working day. If the Weber Construction and Demolition Landfill can not accept incoming waste because of an unforeseen or unknown problem, major customers will be contacted and told of their options. These options include Weber County Transfer Station and the Davis County Landfill. All of these options are inside a 15-mile radius of the site.

2.12 General Training and Safety Plan for Site Operations

The employees and management of the Weber Construction and Demolition Landfill will receive instruction and training in landfill and equipment operations. The training of all personnel will be an ongoing process. Basic first aid, site safety, and CPR certification will also be included. Seminars to keep all personnel up to date on any new procedures for landfill operations will be held at least once a year. The training of personnel will be noted and entered into the operating record of the facility.

Basic first aid will be administered to non-life threatening injuries. 9-1-1 will be called if any injury appears life threatening or beyond basic first aid techniques.

2.13 Planned Recycling Programs at the Facility

Recycling bins for steel and aluminum will be placed on site for use during the landfills operating hours. Concrete and tree limbs will also be piled and recycled. No other materials at this time are cost effective for collection. Any company that can show a viability to collect and recycle the material does not cause a safety issue or interfere will the daily operations of the facility.

2.14 Site Specific Information

Because of the location of the Weber Construction and Demolition Landfill, we don't feel that there is a problem with illegal after hours dumping on or near the site. But, the facility will remove any material that is dumped. If it becomes a problem that we see as major, the Weber County Sheriffs Department will be contacted and the facility will cooperate with them to solve the problem.

If vandalism becomes a problem. The facility will build a fenced enclosure inside of the outer fence to park equipment and supplies so as to reduce the ability to access the equipment.

3.0 Special Requirements for a Class VI Landfill

Submit information required by the Utah Solid and Hazardous Waste Act Subsections 19-6-108(9) and 19-6-108(10)(R315-310-3(2)(a)

3.1 Estimates of the composition, quantities, and concentrations of any hazardous waste identified under this part and the proposed treatment, storage or disposal of it.

3.1.1 The proposed Weber Construction and Demolition Landfill plans only to accept construction and demolition debris (19-6-102(4)(a) and 19-06-102(5)). No hazardous waste (19-6-102(9)), household waste (19-6-102(11)), infectious waste (19-6-102(12)), mixed waste (19-6-102(14)), will be accepted at the site. Because of this and the waste exclusion program that will be in place, we estimate the composition, quantities, and concentrations of hazardous waste to be zero percent.

3.2 Evidence that the disposal of non-hazardous waste or treatment, storage, or disposal of hazardous waste will not be done in a manner that may cause or significantly contribute to an increase in serious irreversible or incapacitating reversible illness, or pose a substantial present or potential hazard to human health or the environment.

3.2.1 The proposed Weber Construction and Demolition Landfill plans only to accept construction and demolition debris ((19-6-102(4)(a) and 19-06-102(5)). Therefore no material that could cause or significantly contribute to an increase in serious irreversible or incapacitating reversible illness, or pose a substantial present or potential hazard to human health or the environment will be accepted. The plan of operation addresses how the landfill will be operated, including the waste exclusion program and the waste handling procedures.

3.3 Consistent with the degree and duration of risks associated with the disposal of non-hazardous solid waste or treatment, storage, or disposal of non-hazardous waste, evidence of financial responsibility in whatever form and amount that the executive secretary determines is necessary to insure continuity of operation and that upon abandonment, cessation, or interruption of the operation of the facility or site, all reasonable measures waste subsequent to being treated, stored, or disposed of at the site or facility will not present a hazard to the public or the environment.

3.3.1 The facility will furnish a bond or escrow account to cover all closure and post closure care costs before the facility opens.

3.4 Evidence that the personnel employed at the facility or site has education and training for the safe and adequate handling of non-hazardous solid or hazardous waste.

3.4.1 The owners of the proposed Weber Construction and Demolition Landfill will hire some employees that have experience in the disposal of construction and demolition waste. The management of the Weber Construction and Demolition Landfill will also send its landfill supervisor and other employees to a seminar on landfill management before operations begin. Because each landfill is unique and the plan of operations vary, basic operations will be learned as everyday operations start. The equipment operators will be trained or hired with the proper training in the safe and proper operations of the equipment and the landfill. The proposed Weber Construction and Demolition Landfill will be a Class VI construction and demolition only landfill. Training in the handling of hazardous waste ill be limited to the Plan of Operation (2.9 pg. 6) of the Weber Construction and Demolition Landfill, Department of Environmental Quality application.

3.5 Plans, specifications, and other information that the executive secretary considers relevant to determine whether the proposed non-hazardous or hazardous waste operation plan will comply with this part and the rules of the board.

3.5.1 We will keep up on all changes in rules and regulations set forth by the secretary.

3.6 Compliance schedules, where applicable, including schedules for corrective action or other response measures for releases from any solid waste management unit at the facility, regardless of the time the waste was placed in the unit.

3.6.1 The Weber Construction and Demolition Landfill will be a Class VI construction and demolition landfill. The facility will only accept construction and demolition waste (19-6-102(4)(a) and 19-06-10(5)) and yard waste (R315-301-2(84)). The landfill will only accept these materials, does not require a liner or water monitoring, and will have a collection trench and no release of any material that will require remedial action is anticipated. Post closure rules will dictate any action required.

3.7 Evidence that the proposed commercial facility has a proven market of non-hazardous solid or hazardous waste, including:

3.7.1 Information on the source, quantity, and price charged for treating, storing, and disposing of potential non-hazardous solid or hazardous waste in the state and regionally.

3.7.1.1 The Weber Construction and Demolition Landfill will be a Class VI construction and demolition landfill. The facility will only accept construction and demolition waste (R315-301-2(16)) and yard waste (R315-301-2(84)). Sources for this waste comes from construction sites, demolition of existing buildings, remodels, home and yard cleanup, and any other construction related activities. The Annual truckloads dumped for the Weber county area is estimated to be 40,000 truck loads. At the moment, most of the tonnage is going into one landfill, the Moulding Co. Landfill on 21st street Ogden. This facility is scheduled to be at capacity and closed within 2 years. No other site other than the Weber Construction and Demolition Landfill is in the licensing process at this time. We also feel the market is capable of supporting two Construction and Demolition Landfills until Moulding closes with the annual tonnage estimate of 250,000 to 500,000 tons.

3.7.2 A market analysis of the need for a commercial facility given existing and potential generation of non-hazardous solid or hazardous waste in Weber County and regionally.

3.7.2.1 The 250,000 to 500,000 tons of construction and demolition debris estimated to possibly be deposited at the Weber Construction and Demolition Landfill come from Weber, Box Elder, and Davis counties. The waste will be directly delivered to the facility. The construction and demolition haulers and the expanding population of these counties are expected to use the facility because of the cost per ton rate and possibly the reduced travel cost to the facility.

3.7.3 A review of other existing and proposed commercial non-hazardous solid or hazardous waste facilities regionally and nationally that

would compete for the treatment, storage, or disposal of the non-hazardous solid or hazardous waste.

3.7.3.1 There is 1 commercial Class VI landfill in Weber County that is a potential competitor of the proposed Weber Construction and Demolition Landfill. It is:

Moulding Landfill
21st Street
Ogden

Moulding is near capacity and is scheduled to close within 2 years.

3.8 A description of the public benefits of the proposed facility, including:

3.8.1 The population growth in the State of Utah is expected to increase at a rate of 1.0-1.3% (http://onlinerealtyut.com/html/population .html) a year. With these growth projections, the population is expected to double in 25 years. There has been only 1 Class VI landfill created in the past 10 years. Because of this, another landfill in Weber County is needed. As the population expands and Moulding Landfill closes, more and more illegal dumping is going to take place. The distance, time needed and the cost of taking waste to the existing landfills and transfer stations is becoming too much for some people. We hope to dramatically decrease the occurrence of illegal dumping in the area by providing a close, economically viable option. The Weber Construction and Demolition Landfill also believes that the availability of the facility will save the public money associated with the disposal of construction, demolition, and yard waste. Another consideration is the fact that a substantial amount of the construction and demolition waste generated is ending up in transfer stations designed for municipal waste taking up valuable space and resources. An example is the Weber County Transfer Station. If just 20% of the construction and demolition debris were to be deposited in the Weber County Transfer Station you would increase the cost of operation and also increase the chances for a public garbage rate increase.

3.8.2 The energy and resources recoverable by the proposed facility;

3.8.2.1 The only materials economically viable right now to recover from the waste stream are concrete, wood chips steel, and aluminum. (See 2.13 General Report pg. 9).

3.8.3 The reduction of non-hazardous solid or hazardous waste management methods, which are less suitable for the environment, that would be made possible by the proposed facility;

3.8.3.1 The proposed Weber Construction and Demolition Disposal Site will bury all waste, less any material that can be recycled. By burying wastes that are not economically feasible to recycle at this time and are not harmful to the environment, large amounts of waste will end up in a properly designated disposal site and not illegally dumped elsewhere. With the waste being buried, the chances of it migrating off site are very small. The Weber Construction and Demolition Landfill will provide landfill accessibility for future commercial and residential expansion in Weber County and any other areas that may benefit from a closer and reasonably priced disposal site.

3.8.4 Whether any other available site or method for the management of hazardous waste would be less detrimental to the public health or safety or to the quality of the environment.

3.8.4.1 The proposed Weber Construction and Demolition Landfill will be a Class VI construction and demolition landfill only. The construction, demolition, and yard waste are not environmental unfriendly. These wastes do no require a linered disposal site or ground water monitoring, thus not requiring hazardous waste type management. No hazardous waste will be accepted at any time. If hazardous waste is detected through the Prohibited Waste Exclusion Plan (see 2.9 General Report pg. 6), it will then be handled as per the plan outlined in sec. 2.9 of the General Report portion of the application.

3.9 Compliance history of an owner or operator of a proposed commercial non-hazardous solid or hazardous waste treatment, storage, or disposal facility, which may be applied by the executive secretary in a non-hazardous solid or hazardous waste operation plan decision, including any plan conditions.

3.9.1 The owner and operator of the Weber Construction and Demolition Landfill will be Warren Construction Services Inc.

3.9.2 Warren Construction Services is a construction and demolition disposal company founded to open the Weber Construction and Demolition Landfill. The majority partner is Brent Warren (President) who has 20 years experience running his own Construction business (New Image Home Improvement Products). The other partner is Scott Warren who has owned and successfully operated Sunrise Exteriors for the last 10 years.

PART III TECHNICAL REPORT

4.0 MAPS / DRAWINGS

4.1 Topographic map drawn to the required scale with contours showing the boundaries of the landfill unit. Ground water monitoring well locations, gas monitoring points, site layout drawings with buildings and the borrow and fill areas; No water or gas monitoring is required.

4.1.1 See Appendix F

4.2 Most recent U.S. Geological Survey topographic map, 7-1/2 minute series, showing the waste facility boundary; the property boundary; surface drainage channels; any existing utilities and structures within one-fourth mile of the site; and the direction of prevailing winds;

4.2.1 See Appendix G

5.0 Geohydrological Assessment

5.1 Local and regional geology and hydrology including faults, unstable slopes and subsidence areas on site.

5.1.1 There are no known faults on or near the proposed site. There doesn't seem to be any subsidence or unstable slopes on site.

See Appendix H for faults and Appendix G for slope angle.

5.2 Evaluation of bed rock and soil types and properties. (Technical Publication No. 93 State of Utah Department of Natural Resources) (Davis Weber Soil Map)

5.2.1 See appendix I, Technical Publication # 93 pg. 3 & Davis Weber Soil Map.

5.3 Depth to ground water

5.3.1 See appendix I, Technical Publication No. 93 pg. 20,21

5.4 Direction and flow rate of ground water

5.4.1 See appendix I, Technical Publication # 93 Fig 2 and pg. 6

5.5 Quantity, location, and construction of any private or public wells on-site or within 2,000 feet of the facility boundary

5.5.1 We have researched our location and adjacent properties within a 3,000 feet of the facility boundary and found 34 underground water right recordings. See Appendix J.

5.6 Tabulation of all water rights for ground water and surface water on-site and within 3,000 feet of the facility boundary.

5.6.1 All water rights are tabulated and shown as per the Utah Division of Water Rights. See Appendix J.

5.7 Identification and description of all surface waters on site and within one mile of the facilities boundaries.

5.7.1 There is no surface water within one mile of the facility boundaries other than drains. See Appendix K.

5.8 Background ground water and surface water quality assessment and, for an existing facility, identification of impacts upon ground water and surface water from leachate discharges.

5.8.1 Utah State Engineer Technical Publication #93, table 13 pg. 91. (See attached appendix I). The Weber Delta Aquifer situated around and under the facility boundaries have had selected wells tested before 1970 and after 1980. Test results are shown.

5.9 Calculation of water site balance

5.9.1 The Weber Construction and Demolition Landfill is a construction, demolition and yard waste facility only. No monitoring of ground or surface water, or leachate collection system for water balance is required.

6.0 Engineering Report- Plans, Specifications, and Calculations

6.1 How the facility meets the location standards of R315-302-1 including documentation of any demonstration made with respect to any location standard.

6.1.1 The location of the facility is not located on any wildlife sensitive areas (see appendix L).

6.1.2 The location of the facility is not located on any historically sensitive areas (see appendix M).

6.1.3 The location of the facility is not located on any wetlands (see appendix N).

6.1.4 The location of the facility if not located on any prime or unique farmland (see appendix O).

6.1.5 The location is not contrary to U. S. Federal Aviation regulations (see appendix P pg. 5).

6.2 The basis for calculating the facilities life

6.2.1 This is the information that was used to calculate the life of the Weber Construction and Demolition Landfill as 20 years 6 months. (Phase 1, 10 years) (Phase 2, 10years 6 months)

(a) Total amount of dumping space at site equals 120,580,045 cubic feet gross space.

(b) Total gross cubic feet of space subtract 10% for dirt mixture equals net dumping space available.
(120,580,045 gross cubic feet * .90 % = 108,522,040 net cubic feet available)

(c) Total net cubic feet divided by 27 equals' cubic yards available.
(10852240 cubic feet / 27 = 4,019,335 cubic yards available)

(d) Average yard equals 1.7 tons in weight.

(e) Net cubic feet multiplied by 1.7 equals available volume in tons
(Net Cubic Feet * 1.7 = available volume in tons)

(f) Yearly working days calculated at 5.5 days a week times 52 weeks a year less holidays.

(5.5 days * 52 weeks = 286 – 6 holidays = 280 working days)

(g) Average of 100 trucks, trailers and end dumps each day with an average of 7 yards each.

1. (100 dumps per day * 7 yards = 700 yards per day)
2. (700 yards per day * 1.7 tons = 1190 tons per day)

(h) Net cubic yards \ tons available divided by daily dump rates divided by 280 work days per year equals projected facilities yearly life span.

Yards 1. (4,019,335 cubic yards / 700 yards per day / 280 yearly working days = 20.5 years life span)

Tons 2. (6,832,869.5 tons / 1190 tons per day / 280 yearly working days = 20.5 years facility life span)

(i) Data Calculations used for Cubic feet Areas

Elevations..... 4430 ft. to 4420 ft = 7884880 cubic feet
4420 ft. to 4410 ft = 12819314 cubic feet
4410 ft. to 4400 ft. = 14312010 cubic feet
4400 ft. to 4390 ft. = 14850000 cubic feet
4390 ft. to 4380 ft. = 15378000 cubic feet
4380 ft. to 4370 ft. = 15571500 cubic feet
4370 ft. to 4360 ft. = 15942500 cubic feet
4360 ft. to 4350 ft. = 16070000 cubic feet
total 112928294 cubic feet

Net Cut (excavation).....4350 ft. to 4345 ft. = 7651755 cubic feet
(excavation below lowest elevation in area)

elevations	112928294
excavation	+ 7651755
total cubic feet	120580045

Total Cubic Feet = 120580045

120580045 cubic feet divided by 27 cubic feet = 4465927.75

Total Cubic Yards = 4465927

Areas calculated using:

- 1:1 side slope in cut areas
- 2:1 side slope in fill areas
- Base (subgrade) elevation of 4345
- Top finish elevation of 4430
- Finished 2% x-slope
- Volume less 10% for dirt mixture = usable space.

Above calculations and Totals see Drawings (see appendix Q)

6.3 Cell design to include liner design, cover design, fill methods, elevation of final cover including plans and drawings signed and sealed by a professional engineer registered in the State of Utah. No liner required.

6.2.1 See Appendix Q.

6.4 Equipment requirements and availability

6.4.1 Weber Construction and Demolition Landfill will require

- 1- Double set of weight scales and scale house
- 1- Cat D84 WHA extra wide track bulldozer
- 1- Cat 966-6 WHA front end loader with aggressive tire pack
- 1- Cat 345 BL Hydraulic excavator
- 1- 2000 gallon water truck
- 1- Service truck

All the equipment above can be bought, leased or rented on the open market or through Wheeler Equipment in Ogden, Utah.

6.5 Identification of borrow sources for daily and final cover and for soil liners

6.5.1 The landfill will be dug an additional 15 feet from lowest point.. This layer is composed of sand and barrow. This material and the additional borrow located on site will be bermed on the East and North side of the cell and be used to close the cell as it moves down its length. Borrow will also be mixed with the waste to

create a good cell fill. No cell liners are required for construction and demolition debris.

6.6 Run-off or leachate collection, treatment, and disposal and documentation to show that any treatment system is being or has been reviewed by the Division of Water Quality.

6.6.1 The Weber Construction and Demolition Landfill is a construction, demolition and yard waste landfill only. It does not require a leachate collection, treatment, and disposal system.

6.7 Ground water monitoring plan that meets the requirements of Rule R315-308 including well locations, design, and construction.

6.7.1 The Weber Construction and Demolition Landfill is a construction, demolition, and yard waste landfill only. It does not require ground water monitoring.

6.8 Landfill gas monitoring and control plan that meets the requirements. Subsection R315-303-3(5) and R315-310-4(2)(c)(vii)

6.8.1 The Weber Construction and Demolition Landfill is a construction, demolition and yard waste landfill only. It does not require landfill gas monitoring.

6.9 Design and location of run-on and run-off control systems

6.9.1 The Landfill Design Drawing shows a berm on both north and east sides of the open part of the cell at all times. Because the South and West sides of the landfill are below ground level, there is no possible run-off problem. Smaller berms on the south and west sides also stop any run-on problem by blocking any moisture from running into the active landfill cell. See Appendix Q.

7.0 Closure Plan

This closure plan has been developed for the proposed Weber Construction and Demolition Landfill in accordance with the Utah Administrative Code (UAC) R315-310-3(3)(h). Closure of the facility will be executed in accordance with this plan and in a manor as to:

1- Minimize the need for further maintenance
2- Minimize or eliminate threats to human health and environmental quality
3- Adequately prepare the facility for the post closure period

7.1 Closure schedule

At least ninety days before the projected final date of operation, the Weber Construction and Demolition Landfill will notify the Department of Environmental Quality of its intent to close the Weber Construction and Demolition Landfill and implement the closure plan, Weber Construction and Demolition Landfill will submit to the Executive Secretary a set of as built drawings of final closure construction.

7.2 Design of final cover

The final cover will be composed of 2 feet of compacted soil that was striped while preparing site and/or left in place on the property while it was being excavated. This is the native topsoil for the area. The cover will be layered down as the cell moves along its length thus closing the cell as it is filled. A 6-inch final cover will be placed on top to receive the revegetation of the site. The final grade will be 3 feet above grade of surrounding property to allow for settling over coming years. See appendix Q.

7.3 Capacity of site in volume and tonnage

The Weber Construction and Demolition Landfill will be constructed of 7 cells varying in length and width. The capacity is calculated by the formula for calculating the facilities life. (See Sec 6.2 pg. 19 of this application)

Based on this formula the approx. total yardage is 4019335 cubic yards

The approx. total tonnage is 6832869 tons

The assumptions for these numbers are:

- 1000 tons per operating day
- Facility open for 280 days per year
- Waste to borrow ratio of 10 to 1
- The elevation capped will be +3'-0" from grade –4430-.

The life of the landfill with these assumptions is approx. 20.5 years.

7.4 Final inspection by regulatory agencies

Following the completion of closure activities a final report will be prepared and entered into the operating record of the facility. The repot will summarize test data supporting the conformance of the final cover of the site and closure activities pertaining to the State of Utah Department of Environmental Quality, Division of Solid and Hazardous Waste, Solid Waste permitting and management rules, and the approved closure plan. The report will also include one set of as built construction drawings signed and sealed by a professional engineer registered with the State of Utah. The Executive Secretary will be notified of the completion of closure activities at the site and arrangements will be made for the final closure inspection by the Utah Department of Environmental Quality. Following the final approval, the post closure plan will be initiated pursuant to the post closure plan outlined in Sec. 8 of this permit application.

8.0 Post-Closure Care Plan

The post-closure care plan has been developed in accordance with UAC R315-310-3(1)-(h). Post closure care and maintenance of the Weber Construction and Demolition Landfill will be performed with the proposed plan, which provides for continuing facility maintenance after the landfill is closed. The Class VI permit for the Weber Construction and Demolition Landfill does not require gas monitoring, water monitoring, or leachate collection, therefore this post-closure care plan does not include any provisions for these activities.

8.1 Site Monitoring

8.1.1 Ground and Surface Water Monitoring

The Weber Construction and Demolition Landfill is a construction, demolition, and yard waste facility only. No monitoring of ground or surface water is required.

8.1.2 Landfill Gas Monitoring

The Weber Construction and Demolition Landfill is a construction, demolition and yard waste facility only. No monitoring of landfill gasses is required.

8.1.3 Leachate Collection and Treatment

The Weber Construction and Demolition Landfill is a construction, demolition, and yard waste facility only. No monitoring of leachate collection systems is required.

8.2 Changes to record of title, land use, and zoning restrictions

Any change to the record of title will be recorded with the Executive Secretary in a timely manner. At this time the usage of the property after the closure and post-closure period has passed has not been addressed. The planned closure of the facility is projected to be between 10 & 20 years distant and any plan for its final disposition will change in the coming years. Any future use of the property will also depend on the zoning restrictions imposed at the time of closure.

8.3 Maintenance activities

After closure of the facility, all unneeded structures on the property will be remove. These structures include the truck scales, scale house, and any service buildings that will be required unless needed for future use. The front gates and fencing will only be removed as needed and all unneeded berms will be leveled. The property will be planted with plants close to the approx. type that was started with or could become a pasture. Any buildings will be maintained and inspected each quarter along with the condition of the final cover, any run-on/run-off systems and the general state of the property. A report on the maintenance will be filed with the Executive Secretary no later than March 1st, of each year following the closure of the Weber Construction and Demolition Landfill and continuing for 20 years or until the Executive Secretary deems that the owner has no further obligation for post-closure activities. A copy of each yearly post-closure maintenance report will be entered into the operating record of the facility.

8.4 Contact name, address, and telephone number

The office below can be contacted at anytime during the post-closure period regarding any issues that pertain to the Weber Construction and Demolition Landfill property.

Brent Warren
2150 W. 3300 S. (B)
Ogden, Utah 84401
Tele (801) 731.0378

9.0 Financial Assurance

9.1 Identification of closure costs including cost calculations

Item	Unit	$/Unit	#Units	Cost
1. Topographic Survey	day	1,250	2	$2,500
2. Contact Admin.			N/A	$2,000
3. Project Management			N/A	$2,000
Engineering Subtotal				$6,500
4. On-Site Final Cover	cy	$2.00	70,000	$140,000
5. Revegetation	acre	$100/acre	53	$5,300
Construction Subtotal				$145,300
Bonding Fee 1.5%			$3,400	$3,400
Subtotal				$155,200
Contingency			$10,000	$10,000
Total			$165,200	$165,200

9.2 Post Closure care costs

Item	Units	$/Unit	#Units	Cost
1. Site Inspection/record keeping	hr.	$50	7	$350
2. Correctional plans	hr.	$75	10	$750
3. Maintenance Const.	hr.	$50	30	$2,000
Subtotal				$3,100
Contingency				$200
Total				$3,200

9.3 Identification of the financial assurance mechanism

Weber Construction and Demolition Landfill will establish a bond or continuing escrow account prior to opening of the landfill. It will provide financial assurance for closure construction and post-closure maintenance at the Weber Construction and Demolition Landfill.

Appendix A

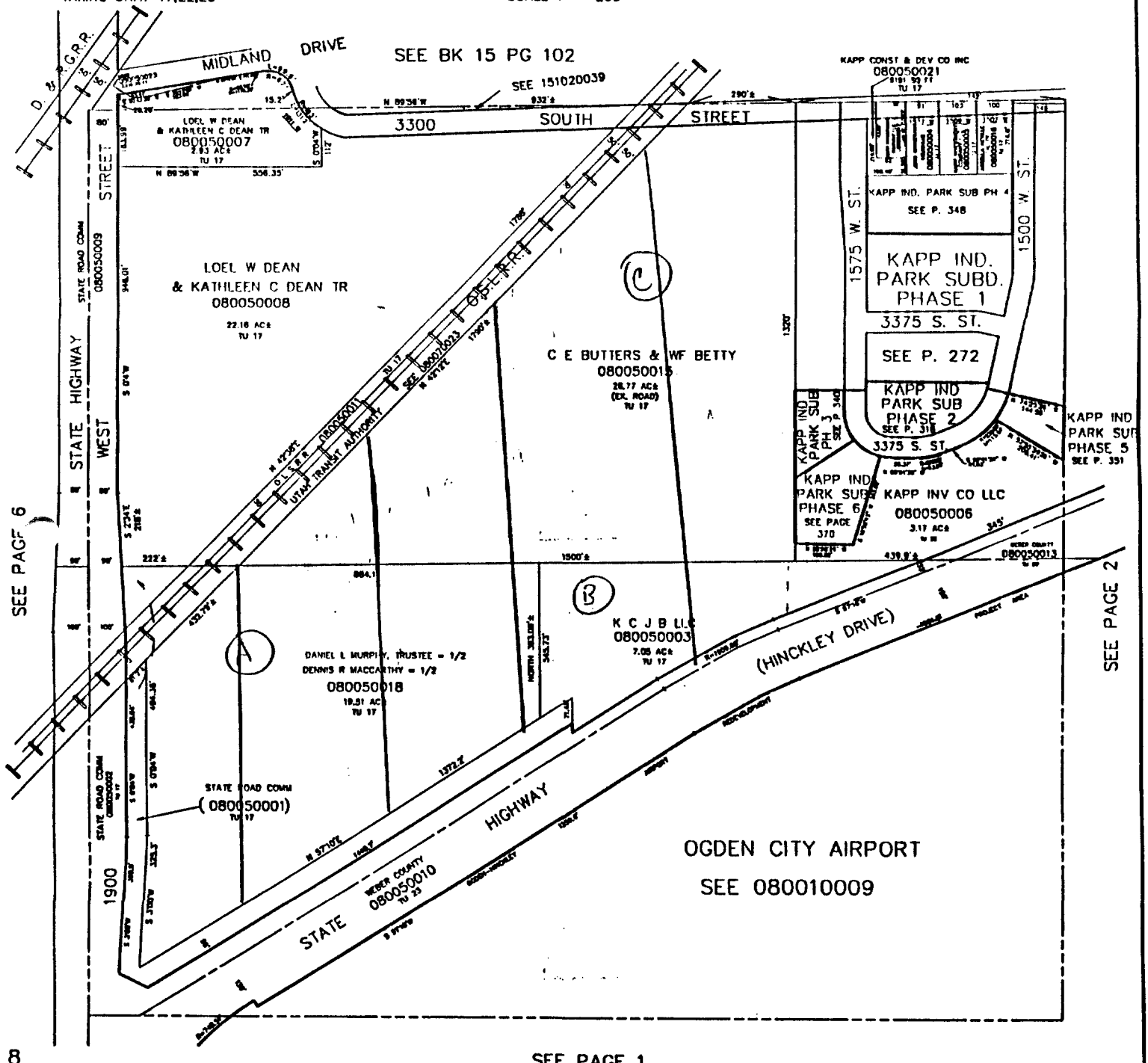
NW 1/4

SECTION 1, T.5N., R.2W., S.L.B. & M.

5

TAXING UNIT: 17,22,23

SCALE 1" = 200'



8

S.H.L. 5-87

DESCRIPTION OF PROPERTY SERIAL NUMBER 08 - 005 - 0018 TAXING UNIT

A

OWNER MURPHY, DANIEL L TRUSTEE 1/2 1759 W 4575 S 17
DENNIS R MACCARTHY 1/2 ROY UT
84067

DESCRIPTION OF PROPERTY 1997 ORIG ACRES; 19.51

TRACT OF LAND SITUATED IN THE SOUTHWEST QUARTER NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 2 WEST, SALT LAKE BASE AND MERIDIAN. THE BOUNDARIES OF SAID TRACT ARE DESCRIBED AS FOLLOWS: BEGINNING AT NORTHEAST CORNER OF SOUTHWEST QUARTER NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 2 WEST, SALT LAKE BASE & MERIDIAN; THENCE WESTERLY 884.1 FEET ALONG THE NORTH BOUNDARY LINE OF SAID SOUTHWEST QUARTER NORTHWEST QUARTER OF SECTION 1 TO THE SOUTHEASTERLY RIGHT OF WAY LINE OF OREGON SHORT LINE RAILROAD; THENCE SOUTHWESTERLY 432.79 FEET, MORE OR LESS, ALONG SAID RAILROAD RIGHT OF WAY LINE TO A LINE WHICH IS PARALLEL TO AND 60 FEET PERPENDICULARLY DISTANT EASTERLY FROM THE EXISTING RIGHT OF WAY LINE OF HIGHWAY KNOWN AS F.A. PROJECT NO. 214-C; THENCE SOUTH 0D04' WEST 494.36 FEET ALONG SAID PARALLEL LINE; THENCE SOUTH 3D00' WEST 325.3 FEET; THENCE NORTH 57D10' EAST 1372.2 FEET ALONG A LINE WHICH IS PARALLEL TO AND 60 FEET PERPENDICULARLY DISTANT NORTHWESTERLY FROM THE EXISTING RIGHT OF WAY LINE OF HIGHWAY KNOWN AS STATE ROUTE NO. 79, TO THE EAST BOUNDARY LINE OF SAID SOUTHWEST QUARTER NORTHWEST QUARTER OF SECTION 1, THENCE NORTH 393.09 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

CONTAINING 19.51 ACRES, MORE OR LESS.

COMMENTS,
***

B

DESCRIPTION OF PROPERTY SERIAL NUMBER 08 - 005 - 0003 TAXING UNIT

OWNER KCJB L L C

760 N HARRISVILLE RD
OGDEN UT
84404

17

DESCRIPTION OF PROPERTY 1995 R/P ACRES; 7.05

PART OF THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 2 WEST, SALT LAKE BASE AND MERIDIAN, U.S. SURVEY: BEGINNING AT AN EXISTING METAL POST ON THE NORTH SIDE OF THE 31ST STREET EXPRESSWAY (HINKLEY DRIVE), SAID POST BEING SOUTH 89D17'09" WEST 1461.55 FEET ALONG THE SECTION LINE AND SOUTH 1821.61 FEET FROM THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 2 WEST, SALT LAKE BASE AND MERIDIAN, U.S. SURVEY; RUNNING THENCE NORTH 0D08'45" EAST 545.73 FEET TO AN EXISTING FENCE, THENCE EAST TO THE NORTH LINE OF ROAD, THENCE SOUTHWESTERLY ALONG SAID ROAD TO THE POINT OF BEGINNING.

EXCEPTING THAT PART OWNED BY THE STATE ROAD COMMISSION.

COMMENTS,
***

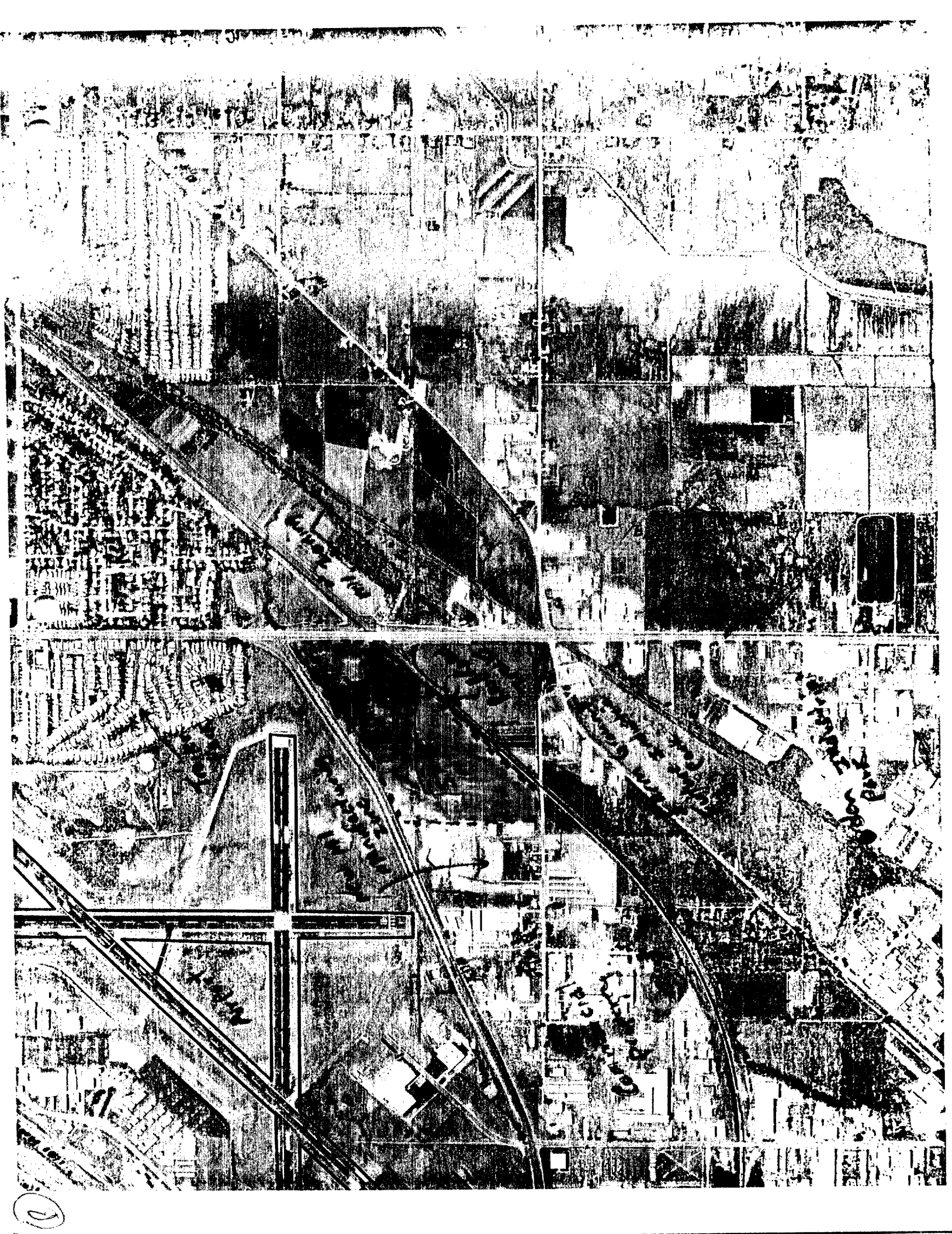
DESCRIPTION OF PROPERTY	SERIAL NUMBER 08 - 005 - 0015	TAXING UNIT
OWNER BUTTERS, C E & WF BETTY BUTTERS	760 N HARRISVILLE RD OGDEN UT 84404	17

DESCRIPTION OF PROPERTY ORIG ACRES; 26.77

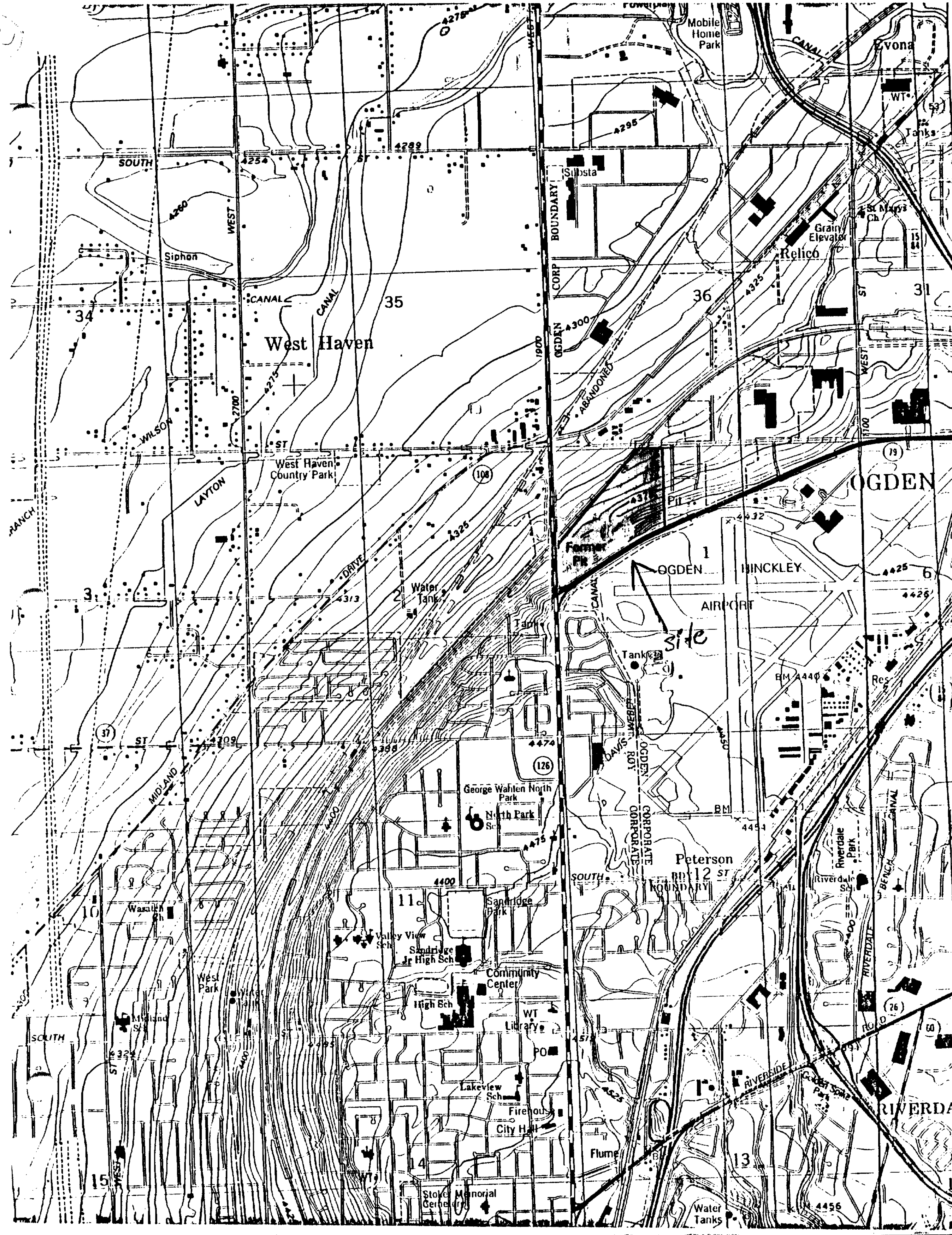
PART OF THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 2 WEST, SALT LAKE MERIDIAN, U.S. SURVEY: BEGINNING AT A POINT ON THE NORTH SECTION LINE OF SECTION 1 SAID POINT BEING 742.5 FEET WEST OF THE NORTH QUARTER CORNER OF SAID SECTION 1; THENCE SOUTH 1320 FEET, MORE OR LESS, TO THE SOUTH LINE OF THE NORTHEAST QUARTER OF SAID NORTHWEST QUARTER OF SECTION; THENCE WEST 1500 FEET, MORE OR LESS, TO THE O.S.L. RAILROAD RIGHT-OF-WAY; THENCE NORTH 42D11' EAST ALONG RIGHT-OF-WAY 1790 FEET, MORE OR LESS, TO THE NORTH LINE OF SECTION; THENCE EAST ALONG SAID SECTION LINE 290 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

COMMENTS,
***

Appendix B



Appendix C



Mobile Home Park
Evona
CANAL
WT
Tanks
SOUTH
ST
Substa
BOUNDARY
CORP
OGDEN
1900
WEST
Siphon
CANAL
35
36
34
31
West Haven
St Marys Ch
Grain Elevator
Relico
ABANDONED
WILSON
2700
West Haven Country Park
LAYTON
OGDEN
Former Pit
Pit
1
OGDEN
HINCKLEY
AIRPORT
6
site
DRIVE
Water Tank
Tank
3
2
Tank
BM 4440
Res
37
ST
MIDLAND
126
DAVIS
WEBER
OGDEN CORPORATE BOUNDARY
ROY CORPORATE BDY
George Wahlen North Park
North Park Sch
BM
Peterson
12
SOUTH
Riverdale Park
Riverdale Sch
BENCH
RIVERDALE
10
Wasatch Ch
11
Sandridge Park
Valley View Sch
Sandridge Jr High Sch
Community Center
High Sch
West Park
Midland Sch
WT
Library
PO
SOUTH
26
60
ROAD
RIVERSIDE
Lakeview Sch
Firehouse
City Hall
Flume
13
14
15
WEST
Stoker Memorial Cemetery
Water Tanks
RIVERDA

C


R. 2 W.
(Joins sheet 28)
WgA
LP
CANAL
Cr
Ac
Fa
AF
IaA
WgA
KaB
LcB
West Haven
City
WaA
KaC
HaA
KaA
PACIFIC
3
2
1
LcB
WESTERN
UNION
FcD
WgA
HaA
Aa
Cr
LcB
FcE2
RIO GRANDE
LcC
FcB
KaB
Ac
FcC
GRAVEL PIT
Roy City
FcB
HaA
TbB
LcC
TbA
LcB
10
12
KaB
McE2
PxB
LcB
Hinckley
Drive
AIRPORT
BOUNDARY
Site
FcD
McE2
FcB
PyB
FcB
GRAVEL PIT
KbA
KmA
Ogden Municipal
Airport
HMG2
KbA
KmC
CANAL
KmA
KbA
GRAVEL PIT

Appendix D

D

Weber Construction and Demolition Landfill
Quarterly Site Inspection Report

Date/Time: _____

DRAINAGE CONTROL **Inspected by:** _____

Notes: _____

Immediate Attention Required: YES/NO _____

Long Term Maintenance Needed: YES/NO _____

FILL SURFACES **Inspected by:** _____

Notes: _____

Immediate Attention Required: YES/NO _____

Long Term Maintenance Needed: YES/NO _____

PERIMETER FENCING **Inspected by:** _____

Notes: _____

Immediate Attention Required: YES/NO _____

Long Term Maintenance Needed: YES/NO _____

SITE EQUIPMENT **Inspected by:** _____

Notes: _____

Immediate Attention Required: YES/NO _____

Long Term Maintenance Needed: YES/NO _____

BUILDING & STRUCTURES **Inspected by:** _____

Notes: _____

Immediate Attention Required: YES/NO _____

Long Term Maintenance Needed: YES/NO _____

Appendix E

E

Weber Construction and Demolition Landfill
Random Record Inspection Form

_____ Date Received
_____ Time Received

Driver's Name: _____

Vehicle Identification: _____
_____

Source of Waste Generator:

_____
_____
_____
_____

Observations Made During Inspection:

_____
_____
_____
_____

Non-Conforming Items
Included in Load (If Any):

_____
_____
_____
_____

If Rejected, Reason for Rejection:

_____
_____
_____
_____

Notes:

_____
_____
_____
_____
_____

Appendix F

BOUNDARY DESCRIPTION (FROM RECORD)

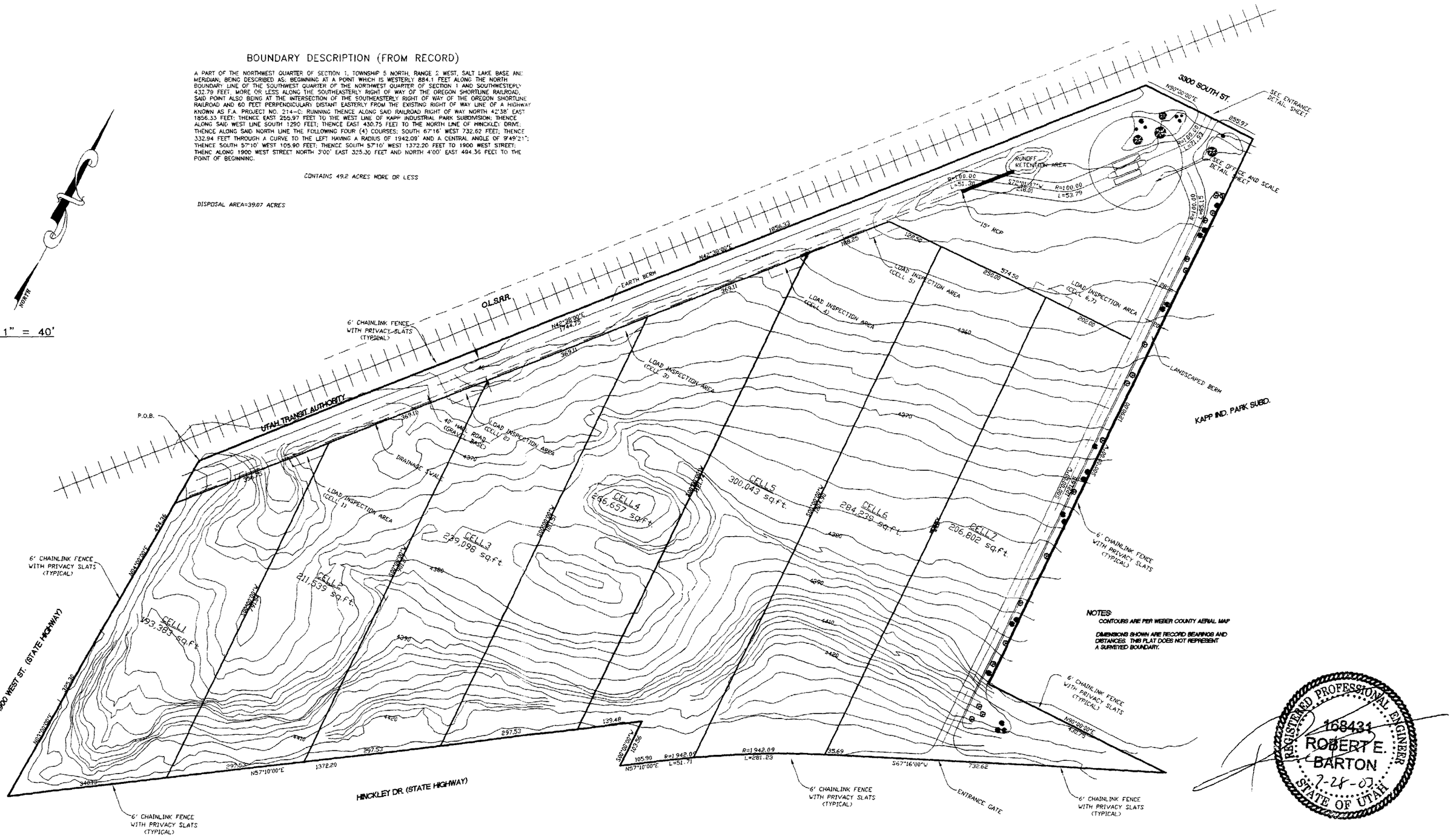
A PART OF THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 2 WEST, SALT LAKE BASE AND MERIDIAN; BEING DESCRIBED AS: BEGINNING AT A POINT WHICH IS WESTERLY 884.1 FEET ALONG THE NORTH BOUNDARY LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 1 AND SOUTHWESTERLY 432.79 FEET, MORE OR LESS ALONG THE SOUTHEASTERLY RIGHT OF WAY OF THE OREGON SHORTLINE RAILROAD, SAID POINT ALSO BEING AT THE INTERSECTION OF THE SOUTHEASTERLY RIGHT OF WAY OF THE OREGON SHORTLINE RAILROAD AND 60 FEET PERPENDICULARLY DISTANT EASTERLY FROM THE EXISTING RIGHT OF WAY LINE OF A HIGHWAY KNOWN AS F.A. PROJECT NO. 214-C; RUNNING THENCE ALONG SAID RAILROAD RIGHT OF WAY NORTH 42°38' EAST 1856.33 FEET; THENCE EAST 259.97 FEET TO THE WEST LINE OF KAPP INDUSTRIAL PARK SUBDIVISION; THENCE ALONG SAID WEST LINE SOUTH 1290 FEET; THENCE EAST 430.75 FEET TO THE NORTH LINE OF HINCKLEY DRIVE. THENCE ALONG SAID NORTH LINE THE FOLLOWING FOUR (4) COURSES; SOUTH 67°16' WEST 732.62 FEET; THENCE 332.94 FEET THROUGH A CURVE TO THE LEFT HAVING A RADIUS OF 1942.09' AND A CENTRAL ANGLE OF 9°49'21"; THENCE SOUTH 57°10' WEST 105.90 FEET; THENCE SOUTH 57°10' WEST 1372.20 FEET TO 1900 WEST STREET; THENC ALONG 1900 WEST STREET NORTH 3°00' EAST 325.30 FEET AND NORTH 4°00' EAST 494.36 FEET TO THE POINT OF BEGINNING.

CONTAINS 49.2 ACRES MORE OR LESS

DISPOSAL AREA=39.07 ACRES

NORTH

SCALE: 1" = 40'



NOTES:

CONTOURS ARE PER WEBER COUNTY AERIAL MAP

DIMENSIONS SHOWN ARE RECORD BEARINGS AND DISTANCES. THIS PLAT DOES NOT REPRESENT A SURVEYED BOUNDARY.

REGISTERED PROFESSIONAL ENGINEER
168431
ROBERT E. BARTON
7-28-03
STATE OF UTAH

REVISIONS
5.) _____
6.) _____
7.) _____
8.) _____

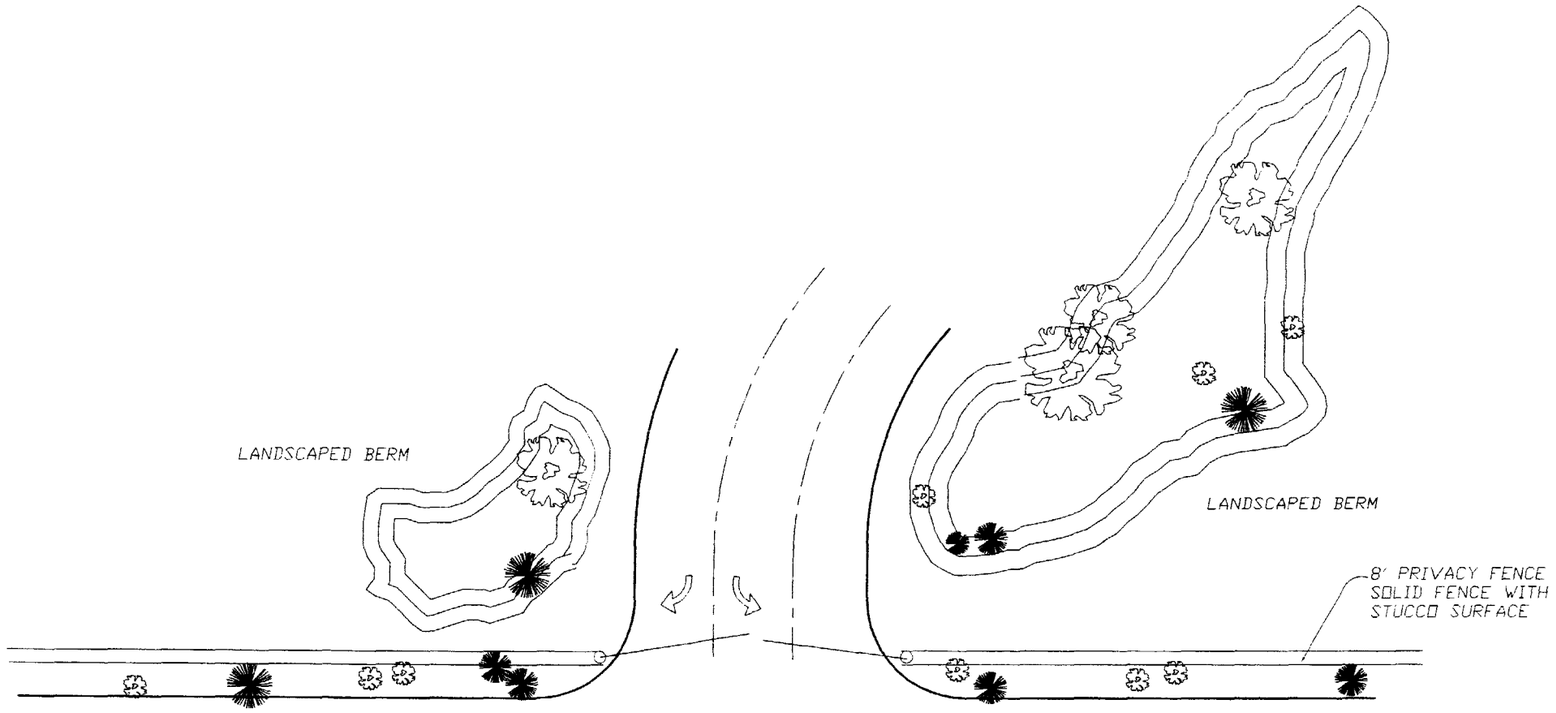
DRAWN BY: DLG | DATE: 02-18-00
CHECKED BY: | SCALE: AS SHOWN
JOB NO. 2489TOPO

LANDMARK SURVEYING AND ENGINEERING, INC.
A COMPLETE LAND DEVELOPMENT SERVICE
4646 S. 3500 W. #A-3, WEST HAVEN, UTAH 84401
PHONE 801-731-4075

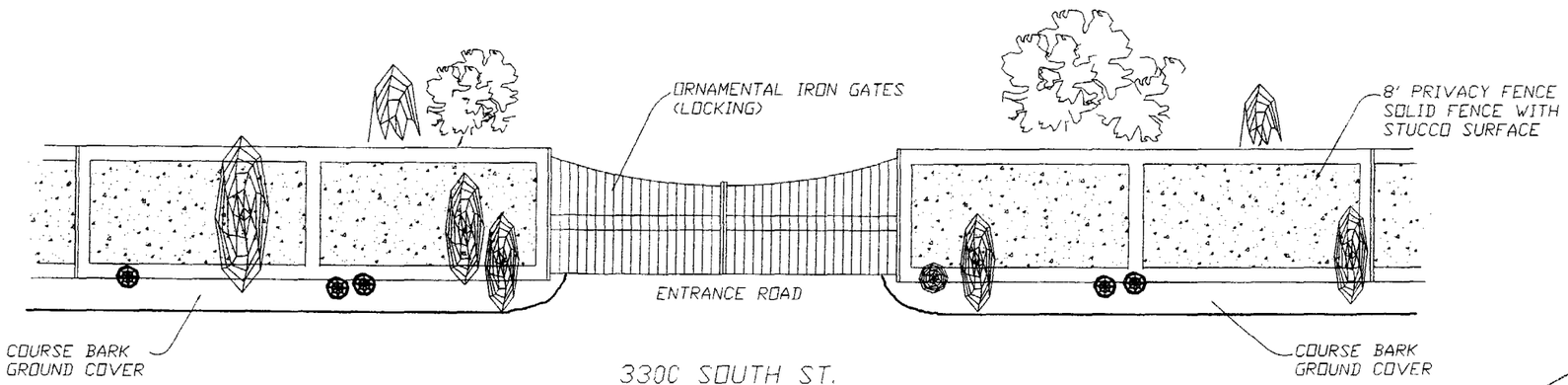
CELL LAYOUT AND EXIST CONTOUR PLAN

WEBER CONSTRUCTION AND DEMOLITION DEBRIS DISPOSAL SITE
1625 WEST 3300 SOUTH (ENTRANCE GATE)
WEBER COUNTY, UTAH
DEVELOPER: BRENT WARREN

SHEET 1 / 1 SHEETS



3300 SOUTH ST.



3300 SOUTH ST.

REGISTERED PROFESSIONAL ENGINEER
168431
ROBERT E. BARTON
7-21-03
STATE OF UTAH

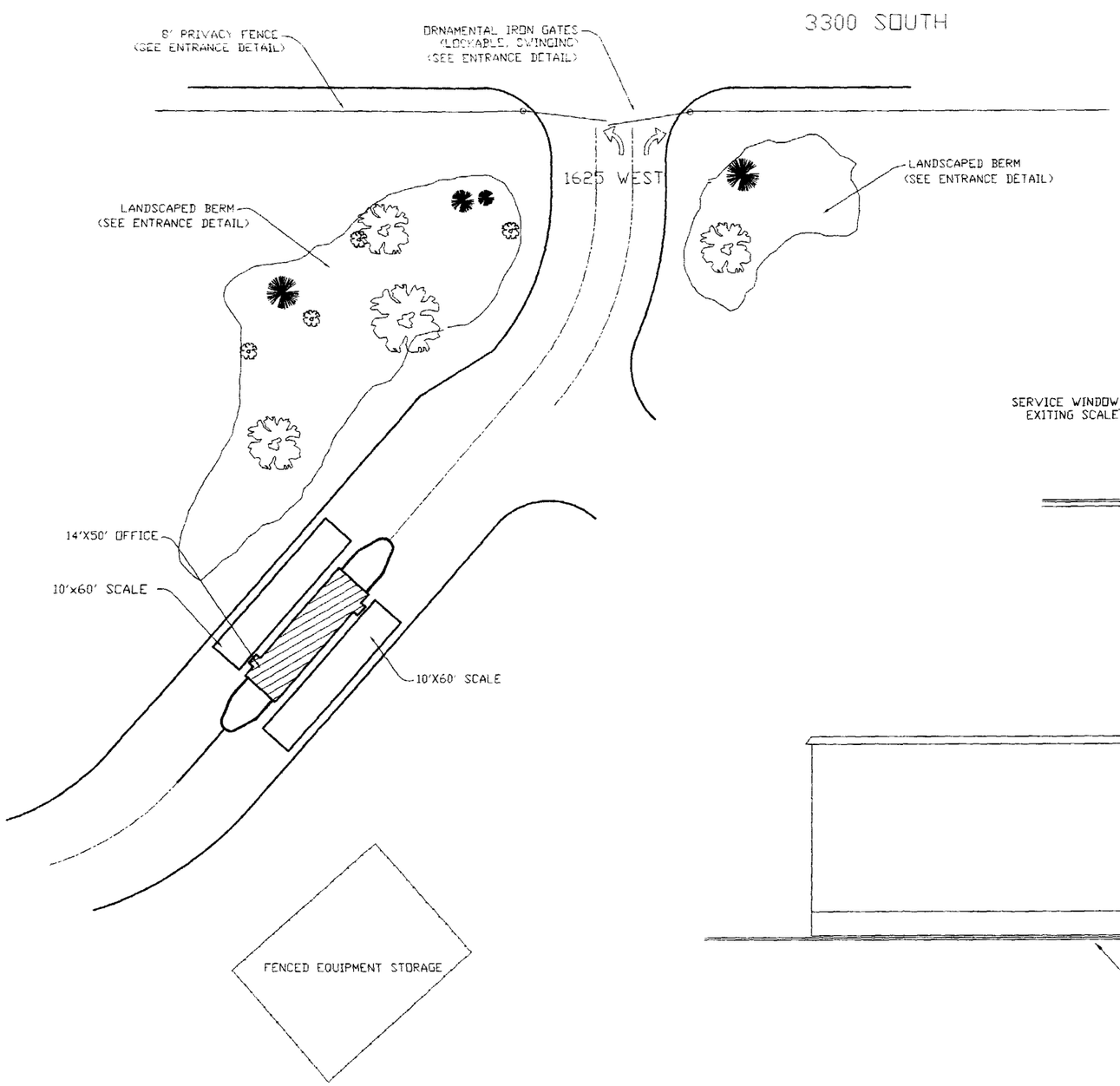
DEVELOPER: BRENT WARREN

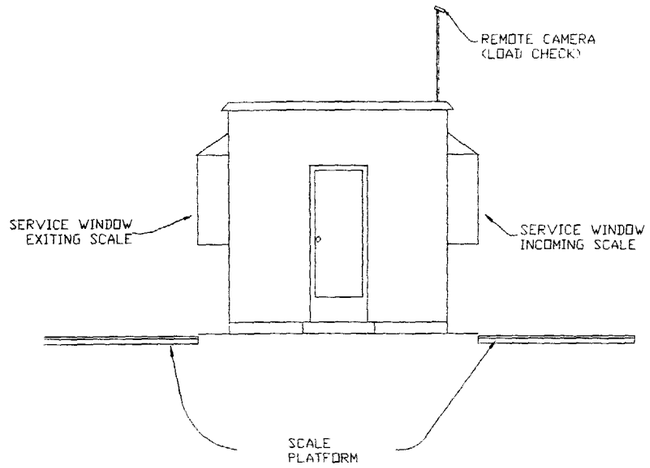
3300 SOUTH
ENTRANCE DETAIL

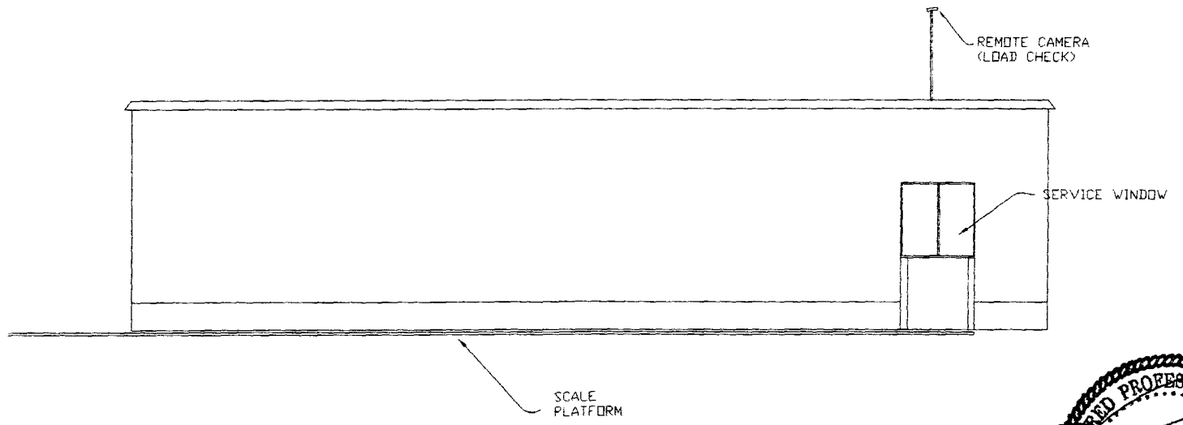
1625 WEST 3300 SOUTH
WEBER COUNTY, UTAH

JOB #2489ENTER

LANDMARK SURVEYING INC.
A COMPLETE LAND SURVEYING SERVICE
4646 S. 3500 W. #A-3, WEST HAVEN, UTAH 84401
PHONE 801-731-4075







REGISTERED PROFESSIONAL ENGINEER
168431
ROBERT E. BARTON
7-28-03
STATE OF UTAH

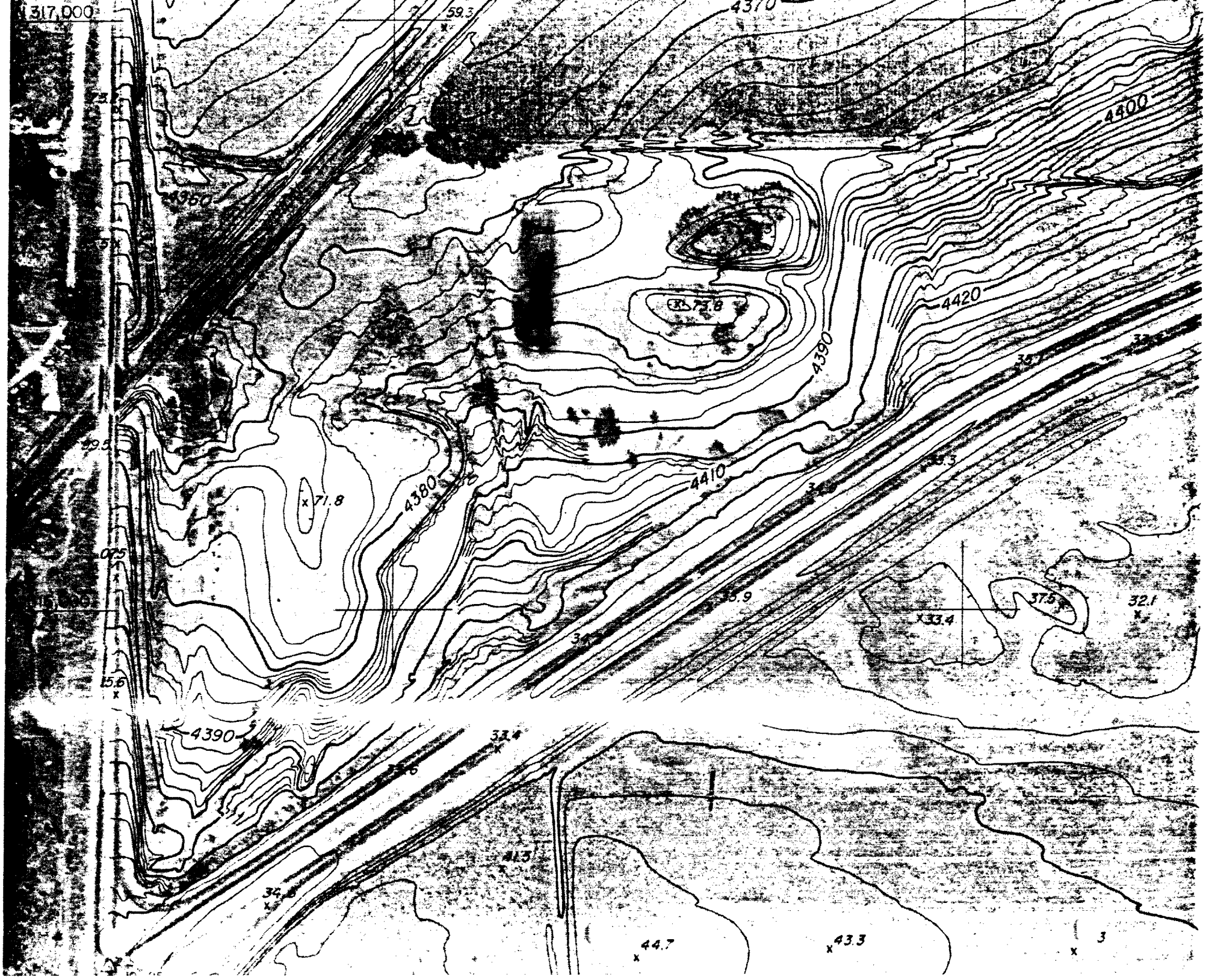
OFFICE AND SCALE DETAIL

1625 WEST 3300 SOUTH
WEBER COUNTY, UTAH

JOB #2489
DWG: SCALE

DEVELOPER: BRENT WARREN

LANDMARK SURVEYING INC.
A COMPLETE LAND SURVEYING SERVICE
4646 S. 3500 W. #A-3, WEST HAVEN, UTAH 84401
PHONE 801-731-4075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4400
4420
4390
4410
4380
71.8
73.8
59.3
4360
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37.5
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44.7
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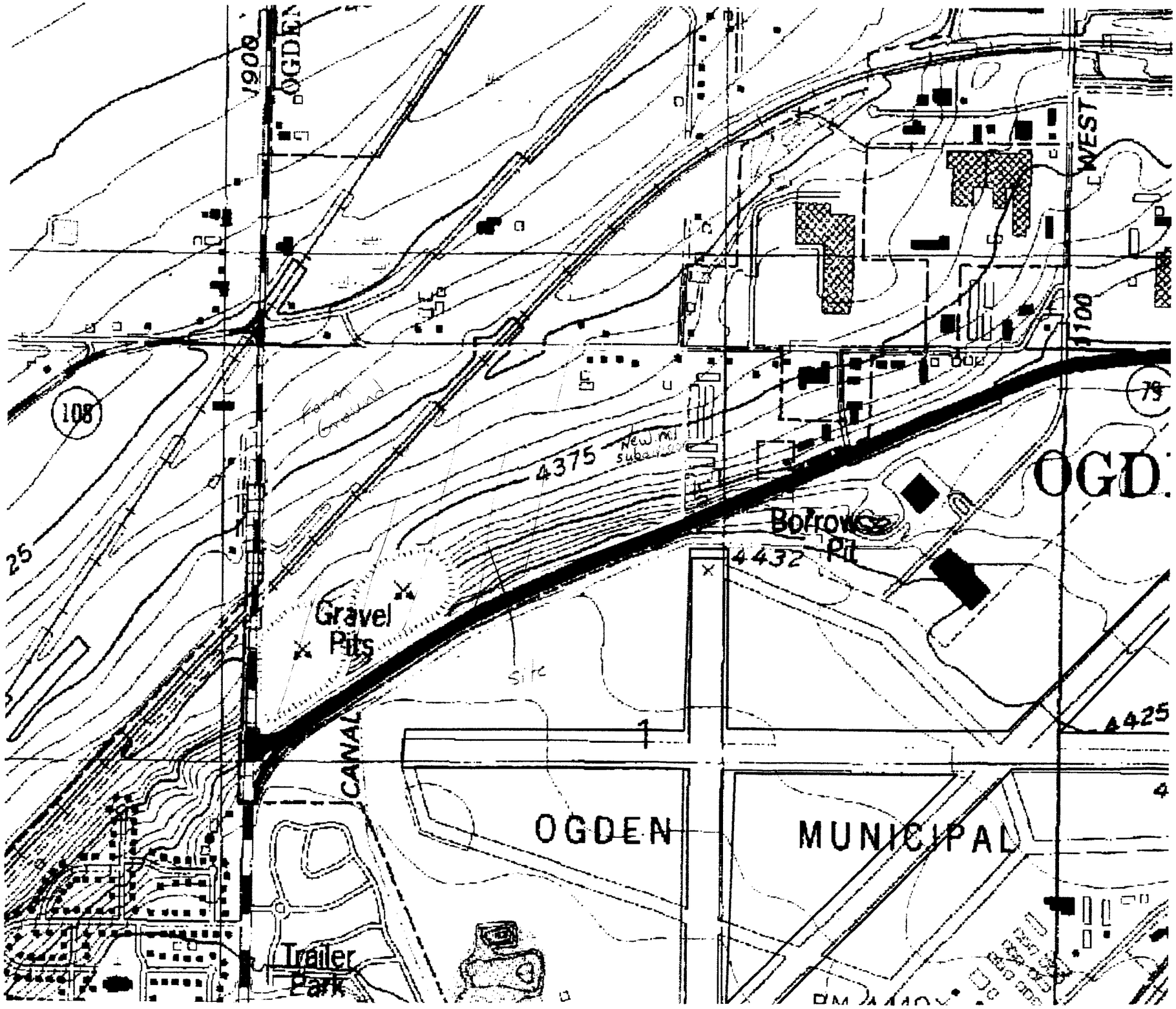
Appendix G

Brent Warren's Property



N

B. Warren's Property
Ogden Municipal Airport

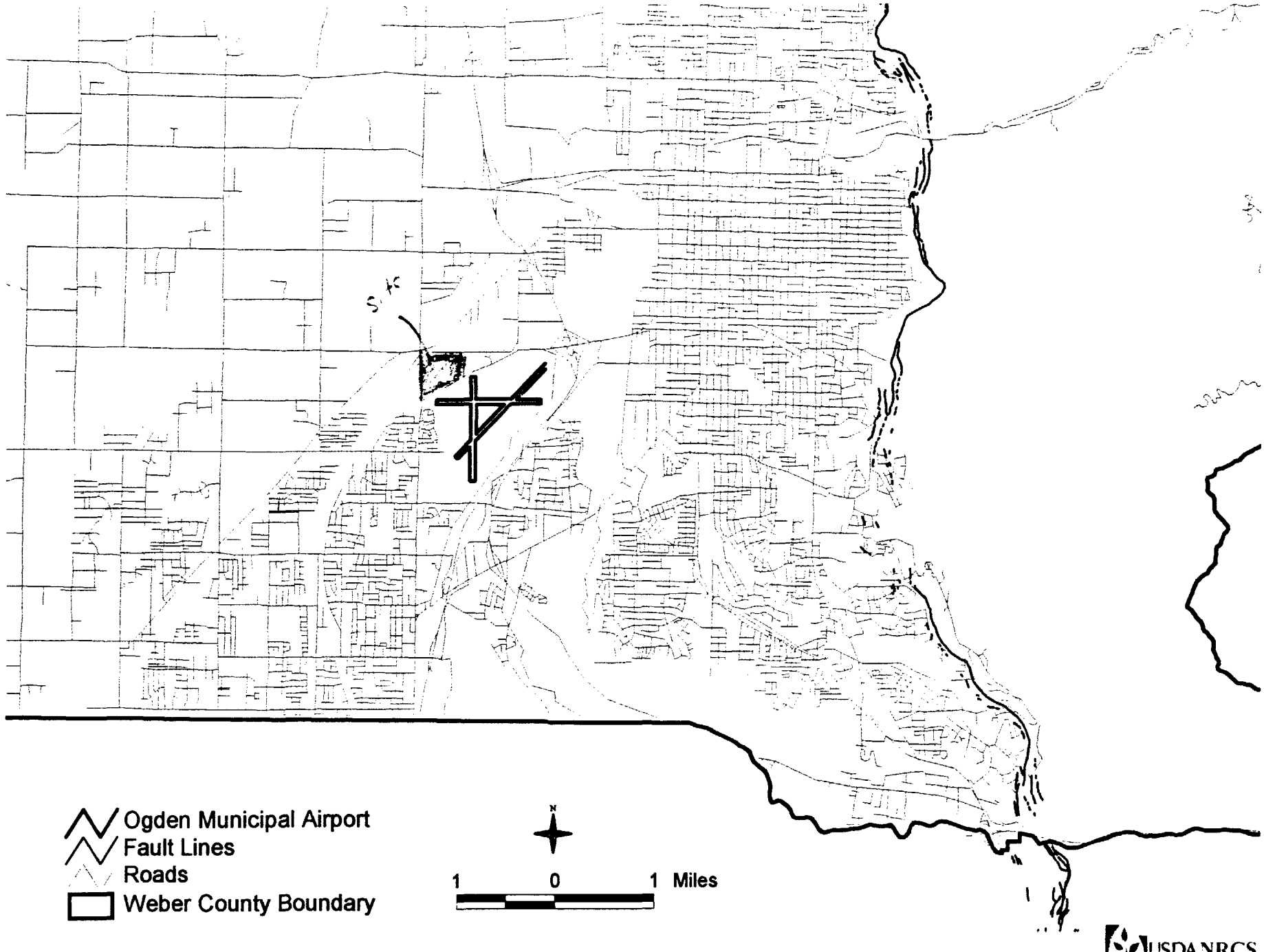
500 0 500 1000 Feet

Contour Interval = 5'

USDA NRCS Utah

Appendix H

Fault Lines in the Ogden Area

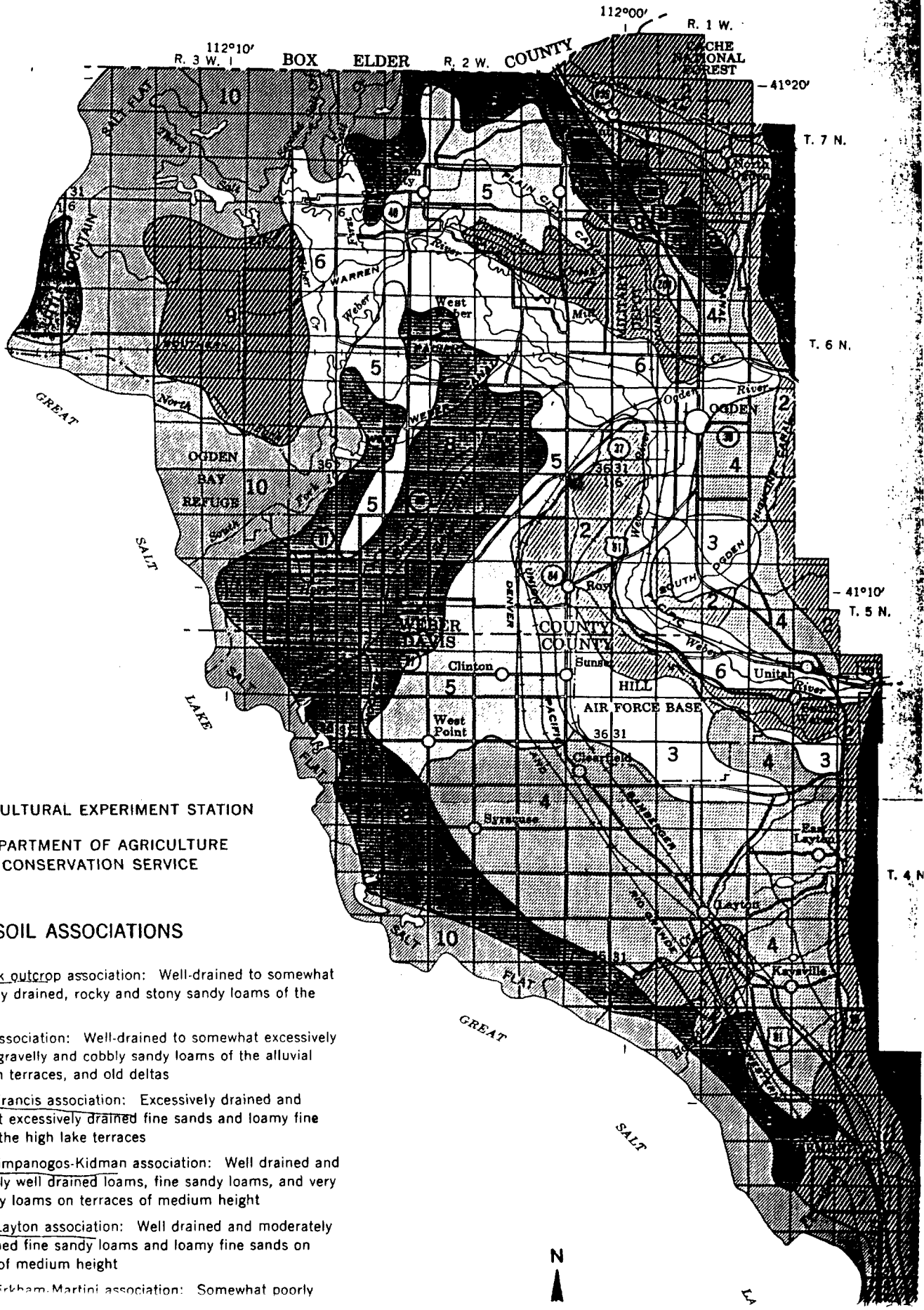


Appendix I

SOIL TYPES

DAVIS & WEBER COUNTIES

GENERAL SOIL MAP
DAVIS-WEBER AREA, UTAH



UTAH AGRICULTURAL EXPERIMENT STATION

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL ASSOCIATIONS

Ridd-Rock outcrop association: Well-drained to somewhat excessively drained, rocky and stony sandy loams of the uplands

2 — Kilburn association: Well-drained to somewhat excessively drained, gravelly and cobbly sandy loams of the alluvial fans, high terraces, and old deltas

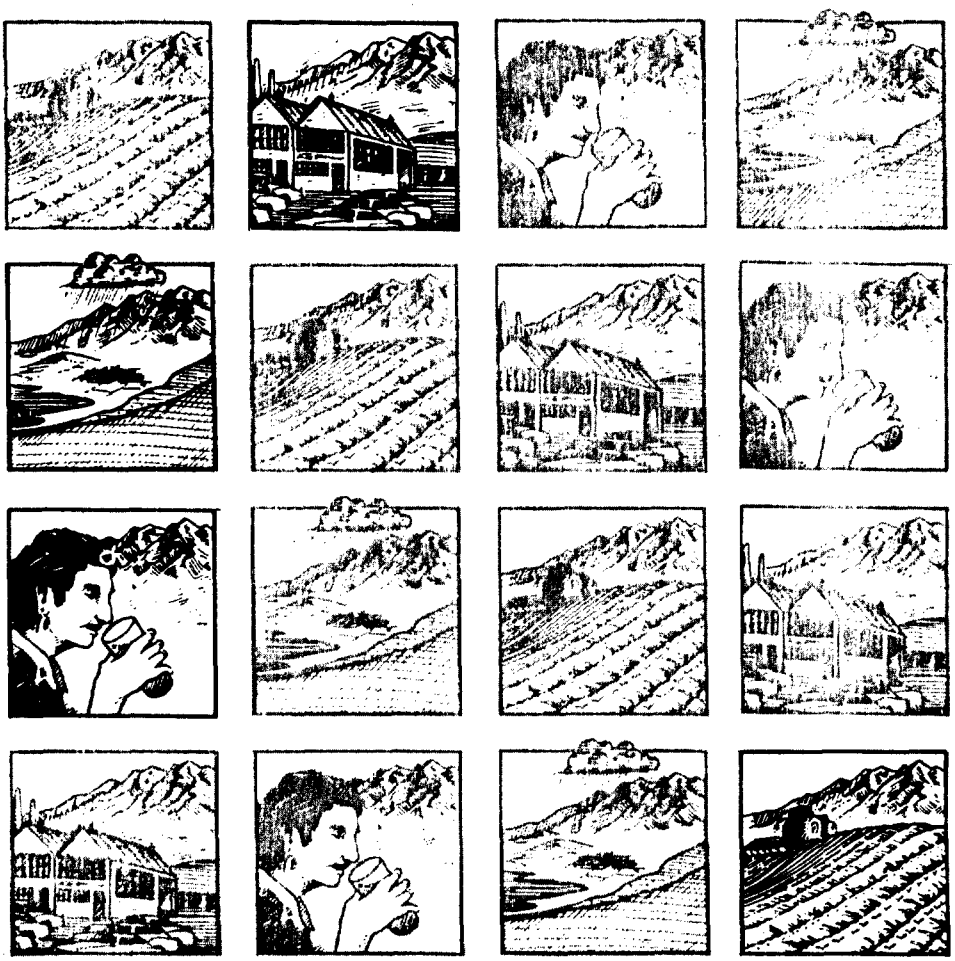
3 — Preston-Francis association: Excessively drained and somewhat excessively drained fine sands and loamy fine sands of the high lake terraces

4 — Parleys-Timpanogos-Kidman association: Well drained and moderately well drained loams, fine sandy loams, and very fine sandy loams on terraces of medium height

5 — Kidman-Layton association: Well drained and moderately well drained fine sandy loams and loamy fine sands on terraces of medium height

Sunset-Kirkham-Martini association: Somewhat poorly

GROUND-WATER RESOURCES AND SIMULATED EFFECTS OF WITHDRAWALS IN THE EAST SHORE AREA OF GREAT SALT LAKE, UTAH



Technical Publication No. 93
State of Utah
DEPARTMENT OF NATURAL RESOURCES
1990

GROUND-WATER RESOURCES AND SIMULATED EFFECTS OF WITHDRAWALS IN THE EAST SHORE AREA OF GREAT SALT LAKE, UTAH

By David W. Clark, Cynthia L. Appel,

Patrick M. Lambert, and Robert L. Puryear

U.S. Geological Survey

ABSTRACT

The ground-water resources in the East Shore area of Great Salt Lake, Utah, were studied to better define the ground-water system; to document changes in ground-water levels, quality, and storage; and to simulate effects of an increase in ground-water withdrawals. The East Shore aquifer system is in basin-fill deposits, and is primarily a confined system with unconfined parts near the mountain front.

Recharge to and discharge from the East Shore aquifer system were estimated to average about 160,000 acre-feet per year during 1969-84, with minor amounts of water being removed from storage during that period. Major sources of ground-water recharge are seepage from surface water in natural channels and irrigation canals, and subsurface inflow from consolidated rock to the basin-fill deposits. Discharge of ground water is primarily to wells, water courses, springs, and as diffuse seepage to Great Salt Lake. Average annual surface-water inflow to the study area was estimated to be 860,000 acre-feet for the period 1969-84. Annual withdrawal of ground water for municipal and industrial use increased from about 10,000 acre-feet in 1960 to more than 30,000 acre-feet in 1980 to supply a population that increased from 175,000 in 1960 to 290,000 in 1980.

Long-term trends of ground-water levels indicate a steady decline at most observation wells since 1952, despite near normal or increased precipitation since the late 1960's. Water levels declined as much as 50 feet near the principal pumping center in the east-central part of the study area. They declined as much as 35 feet more than five miles from the pumping center. The increase in withdrawals and subsequent water-level declines have caused about 700 wells within 30 square miles to cease flowing since 1954.

A numerical model of the East Shore aquifer system in the Weber Delta area was constructed and calibrated using water-level data and changes in ground-water withdrawals for 1955-85. Predictive simulations were made based on doubling the 1980-84 rate of municipal and industrial withdrawals for 20 years, and using both average and below-average recharge rates. The simulations indicated water-level declines of an additional 35 to 50 feet near the principal pumping center; a decrease in natural discharge to drains, evapotranspiration, and Great Salt Lake; and a decrease in ground-water storage of 80,000 to 115,000 acre-feet after 20 years.

INTRODUCTION

Increased ground-water withdrawal by municipal and military users in the East Shore area of Great Salt Lake has caused widespread water-level declines. Water levels have declined as much as 50 feet in some areas since 1952. State and local water managers and water users needed an updated evaluation of ground-water conditions and a tool with which to simulate effects of future changes in recharge and discharge of ground water.

Purpose and Scope

During 1983-85, the U.S. Geological Survey evaluated the ground-water resources of the East Shore area of Great Salt Lake, Utah. The study was done in cooperation with the Utah Department of Natural Resources, Division of Water Rights. Objectives of the study were to add to the understanding of the area's ground-water hydrology, to determine changes in ground-water conditions since the 1960-69 study by Bolke and Waddell (1972), and to simulate effects of potential future ground-water withdrawals on ground-water levels, discharge, and storage.

Information collected during this study included discharge from wells; water levels in wells; drillers' logs of wells; water samples for chemical analysis; seepage losses from or gains to canals, streams, and drains; and hydraulic properties of aquifers. A digital-computer model of the ground-water system was constructed on the basis of this and other information.

This report emphasizes ground water in the basin-fill deposits of the East Shore area, referred to as the East Shore aquifer system. The report describes ground-water conditions, including recharge, movement, and discharge, water levels, water quality, and volumes of water in storage. In addition, the report describes a computer simulation of the aquifer system in the Weber Delta area (fig. 1), including simulated effects of potential changes in ground-water recharge and discharge. A separate report (D.W. Clark, U.S. Geological Survey, written commun., 1990) includes a computer simulation of the aquifer system in the Bountiful area (fig. 1). The results and interpretations presented here are based primarily on data presented by Plantz and others (1986). Their report contains records of water quality, discharge, water levels, and drillers' logs for wells in the area.

Location and Physiography

The East Shore area is a valley or basin lowland north of Salt Lake City between the western margin of the Wasatch Range and the eastern shore of Great Salt Lake (fig. 1). It is at the eastern edge of the Basin and Range physiographic province (fig. 1), and is a densely populated urban-industrial-suburban area. The largest city is Ogden, which had a population of about 64,000 in 1980 (U.S. Department of Commerce, 1980). Hill Air Force Base (fig. 1), the area's largest employer, includes about 10 square miles of the study area.

The study area is about 40 miles long and from 3 to 20 miles wide. It includes all of Davis County, about one-half of Weber County, and a small part of southern Box Elder County. The southern boundary is the Davis-Salt Lake County line, and the northern boundary is about 1 mile north of the town of

Willard. The eastern boundary is the consolidated rock of the Wasatch Range and the western boundary is several miles west of the Great Salt Lake shoreline.

The East Shore study area includes two somewhat separate hydrologic areas, the Bountiful area and the Weber Delta area. The Bountiful area is between the Salt Lake-Davis County line and the line between Townships 2 and 3 North. The Weber Delta area is considered in this report to start at the northern end of the Bountiful area and continue to the north edge of the study area.

The total amount of land within the study area fluctuates with the level of Great Salt Lake. During this study, the level of the lake rose at an unprecedented rate, inundating large tracts of lowlying land near its eastern shore. During 1969-82 the level of the lake was at an average altitude of about 4,199 feet, but during 1983-84 the lake rose rapidly to an altitude of about 4,209 feet. At a lake level of 4,199 feet, the study area is about 430 square miles, whereas at a lake level of 4,209 feet, the study area is about 330 square miles.

The study area contains two distinct physiographic units. The eastern unit is composed of benches (terraces) adjacent to the Wasatch Range that extend westward in a series of large steplike units (fig. 2). These terraces, formed by Pleistocene Lake Bonneville (Gilbert, 1890) have since been dissected by closely spaced mountain-front streams. The second unit is a valley-lowland plain with minor topographic relief that extends from the western edge of the terraces to the shores of Great Salt Lake (fig. 2). The valley-lowland plain ranges in width from 1 or 2 miles south of Farmington and near Willard to about 14 miles north of Ogden, but this width varies with changing levels of Great Salt Lake.

The altitude of the valley floor ranges from about 5,000 feet near the Wasatch Range to about 4,200 feet at the eastern margin of Great Salt Lake, depending on the lake level. The crest of the Wasatch Range is about 4,000-5,000 feet above the valley floor; the altitude of the highest peaks are more than 9,700 feet.

Geohydrologic Setting

The East Shore aquifer system lies within an elongate graben formed by normal faulting along the Wasatch fault zone to the east and an undefined fault zone near the shore of Great Salt Lake to the west (fig. 2). Displacement along the Wasatch fault zone may be as much as 10,000 feet (Feth and others, 1966, p. 21). A major fault is inferred to trend southward just east of the consolidated rocks exposed at Little Mountain and toward Hooper Hot Springs (fig. 3)(Feth and others, 1966, p. 22). This fault corresponds to the western edge of the graben near the shore of Great Salt Lake (Cole, 1982, p. 592).

The Wasatch Range is composed of metamorphic and sedimentary rocks that range from Precambrian to Tertiary in age. The rocks in the Wasatch Range south of the Ogden River primarily are Precambrian gneiss, schist, and quartzite, whereas north of the river the Wasatch Range also contains

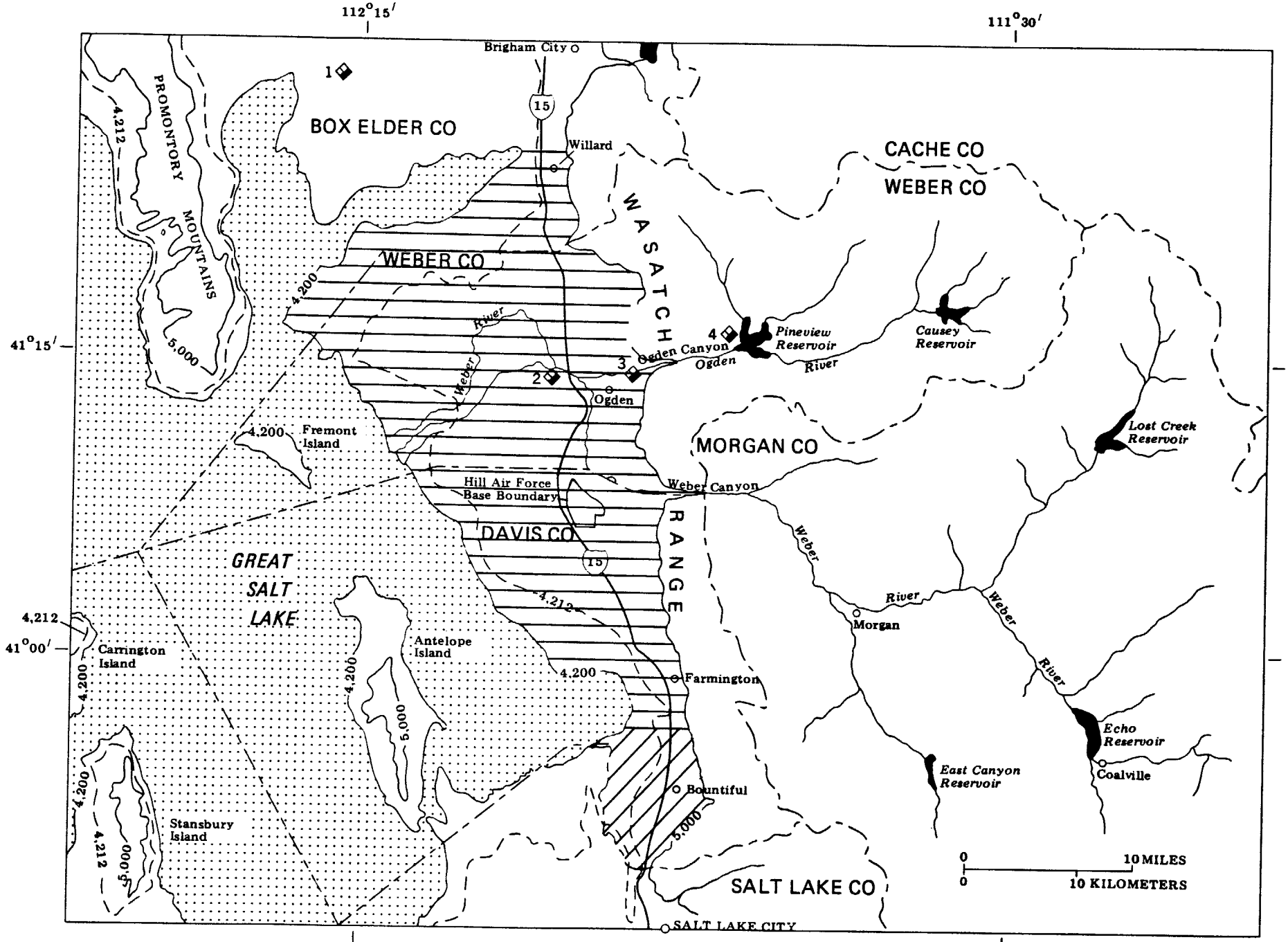


Figure 1.--Location of the East Shore area of Great Salt Lake.

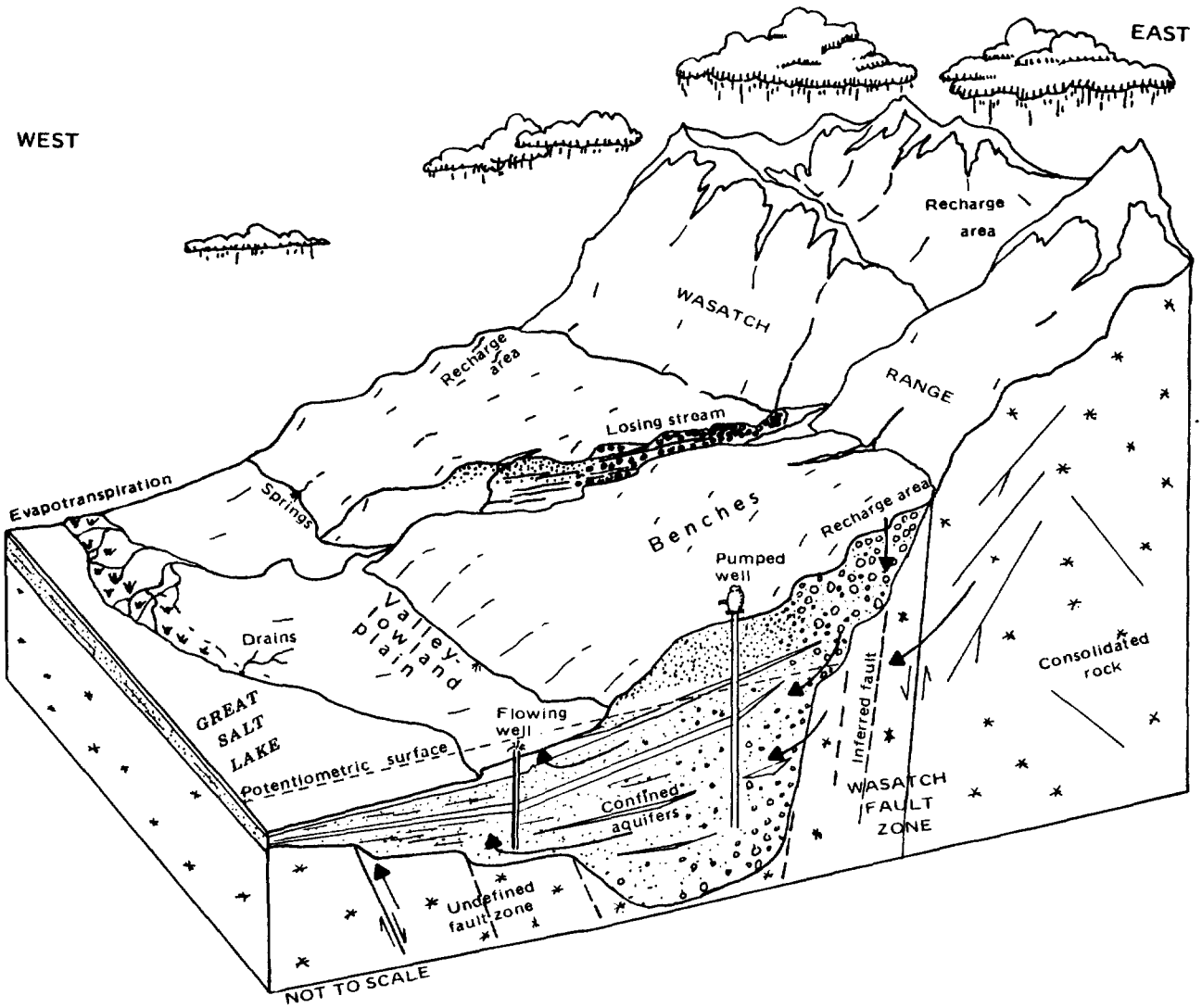


Figure 2.--Generalized block diagram showing water-bearing formations, probable directions of ground-water movement (arrows), and areas of recharge and discharge.

Paleozoic limestones, dolomites, shales, and quartzites. Tertiary conglomerates are exposed in the area south of Bountiful.

Basin-fill deposits comprising the East Shore aquifer system were eroded from the mountains and deposited in the grabens during Pleistocene Lake Bonneville and pre-Lake Bonneville time. The basin fill is composed of unconsolidated and semi-consolidated sediments in a series of interbedded alluvial and lacustrine deposits. Most of the sediments are coarse grained near the mountains, particularily near the mouths of canyons, where delta, alluvial-fan, and mudflow materials predominate. Fine-grained sediments predominate toward the western edge of the graben, where most of the deposits are lacustrine. The total thickness of the basin fill generally is unknown, but is estimated to be approximately 6,000 to 9,000 feet thick in the Weber Delta area (Feth and others, 1966, p. 22). On the basis of shallow seismic-reflection surveys, the total thickness may be as much as 6,300 feet near the Weber River in T. 5 N., R. 2 W. south of Slaterville (fig. 3)(Feth and others, 1966, p. 28); on the basis of gravity data, the thickness may be as much as 7,500 feet under Hill Air Force Base (Glenn and others, 1980, p. 37-47). The thickness of basin-fill deposits decreases substantially toward the western edge of the graben. The thickness of the basin fill in the Bountiful area is unknown; however, the deepest well in the area was completed in unconsolidated material at a depth of 1,985 feet (Thomas and Nelson, 1948, p. 86).

Further description of the geology of the East Shore area can be found in Feth and others (1966) and Thomas and Nelson (1948). In addition to subsurface geology, paleontology, and structure, Quaternary and surficial geology are detailed in those reports.

Climate

The climate of the East Shore area is temperate and semiarid with a typical frost-free season from May to mid-October. Precipitation increases from west to east across the valley lowland and on the adjoining mountains as altitude increases (table 1); the mean annual temperature differs little with altitude. The normal annual precipitation ranges from less than 12 inches near Great Salt Lake to more than 20 inches near the mountain front. During 1983, however, precipitation was more than twice the normal quantity (National Oceanic and Atmospheric Administration, Environmental Data Service, 1984).

Population and Land Use

The East Shore area is one of the fastest-growing regions in the United States; its population has increased about 66 percent since 1960. The 1980 population was about 290,000; about 260,000 people lived within incorporated areas (table 2). The population has increased everywhere except within the city of Ogden; in many places the population has doubled or tripled since 1960. The increase in population has occurred primarily in the southern part of the area, and in suburban areas, which have expanded onto former agricultural lands.

The 1968-85 change in land use from irrigated cropland and natural vegetation to urban is shown in figure 4. There was an increase of about 12,000 acres of land classified as urban, of which 75 percent was formerly

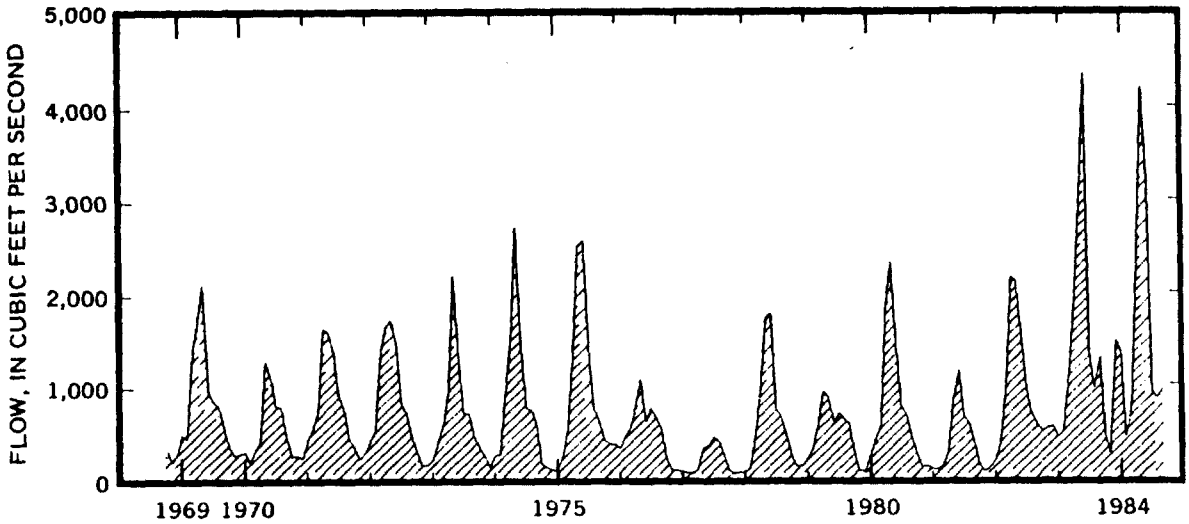


Figure 6.--Monthly mean flow of the Weber River at Gateway, Utah, 1969-84.

Surface-water inflow to Great Salt Lake from the East Shore area is estimated to be about 650,000 acre-feet per year for 1969-84, or about 75 percent of the total surface-water inflow to the area. This total was calculated from data for 1971-76 in a report on total inflow to Great Salt Lake (Waddell and Barton, 1980, p. 37-40), and data for the same period from tables 3 and 4 in this report. Some of this inflow is return or unused irrigation water, or ground water that seeped into natural channels or irrigation canals.

GROUND WATER

The East Shore aquifer system is defined as consisting of saturated alluvial deposits between the Wasatch Range and Great Salt Lake and which includes artesian aquifers plus a deep unconfined aquifer along the mountain front. The shallow water-table zone in the topographically low parts of the area is part of the overall ground-water system of the East Shore area but is not considered part of the East Shore aquifer system as defined in this report. The shallow water-table zone was not included because of lack of data on recharge to the zone by infiltration of precipitation, large amounts of seepage from irrigation, and infiltration of urban runoff and water from urban activities, and a similar lack of data on discharge from the zone.

Geology and Hydraulic Properties of the East Shore Aquifer System

The East Shore aquifer system is primarily confined with some unconfined parts along the mountain front. The consolidated rocks in the mountains contain water, but they are considered to be only a source of recharge to the East Shore aquifer system.

Feth and others (1966, p. 36-37) described the Weber Delta area and Thomas and Nelson (1948, p. 167-172) the Bountiful area of the East Shore aquifer system. The Weber Delta area was described as containing two confined aquifers, the Sunset and Delta, and locally unnamed parts of those aquifers. The Bountiful area was described as containing shallow, intermediate, and deep

artesian aquifers. In this report, however, the East Shore aquifer system is defined as the saturated sediments between the Wasatch Range and the study area's western boundary, excluding the shallow water-table zone in the topographically low parts of the area but including the Sunset and Delta aquifers.

The East Shore aquifer system contains individual confined aquifers that have previously been defined and named, unconfined laterally-upgradient extensions of those aquifers, multiple confined zones within the individual aquifers, and confined and unconfined zones of the aquifer system outside of the areas where individual aquifers have previously been defined. The individual confined aquifers, as previously defined, typically are separated by predominately fine-grained layers several feet to several hundred feet thick which can cause a substantial difference in the hydraulic head (which generally increases with depth in the topographically lower parts of the East Shore area) between the aquifers. Where confining layers are thin or more permeable, ground water easily moves vertically through them from one aquifer to another. This is evident when a well completed in a deep aquifer zone is pumped and water-level declines are observed in wells completed in a shallower aquifer zone. The water-level declines in the shallower aquifer zone are a result of leakage through the confining layers separating the zones. However, where confining layers are tens to hundreds of feet thick and less permeable, little vertical movement takes place, and pumping a well in a deep aquifer zone results in only small water-level declines in an overlying aquifer zone.

The Sunset and Delta aquifers, as defined by Feth and others (1966), were delineated in the central part of the Weber Delta area from about Kaysville north to Plain City and from the western part of Hill Air Force Base west to Hooper (fig. 7). Near Great Salt Lake the aquifers are composed of thin alternating layers of silt, clay, and sand, and are difficult to differentiate. Within each aquifer, alternating layers of fine and coarse-grained materials occur. Within the central part of the Weber Delta area, wells completed at depths from 200 to 400 feet were considered to be completed in the Sunset aquifer, and wells completed at a depth greater than 400 feet were considered to be completed in the Delta aquifer. In all areas outside of the central part of the Weber Delta area, no delineation of indiviual aquifers within the East Shore aquifer system was made.

The top of the Sunset aquifer is as shallow as 200 feet below land surface in some locations, but is more typically between 250 and 400 feet below land surface (Feth and others, 1966, p. 37). The aquifer is composed of sand; mixtures of gravel, sand, and clay; or sand and clay. The thickness of the aquifer ranges from 50 to 200 feet. The Sunset aquifer is less permeable than most of the rest of the East Shore system and consequently fewer wells are completed in the Sunset. The material composing the aquifer becomes progressively finer grained toward Great Salt Lake.

The Delta aquifer, which is assumed to underlie most of the Weber Delta part of the East Shore aquifer system, is mostly composed of deltaic deposits of the Weber River that extend westward from the mouth of Weber Canyon. The top of the aquifer is from 500 to 700 feet below land surface in most locations (Feth and others, 1966, p. 36). The aquifer is estimated to be between 50 and 150 feet thick. The total thickness has been penetrated by few wells, and thus is unknown in many places. The Delta aquifer primarily is

Changes in Water Quality

During previous studies in the East Shore area, a network of wells was established for water-quality sampling in order to determine if any changes in water quality occurred with time. The network was established because of the variety of water types in the area and because of the potential for unsuitable, mineralized water migrating toward areas of potable, less mineralized water with increasing ground-water development and resulting water-level changes. Smith and Gates (1963) and Bolke and Waddell (1972) described changes that had occurred at the time of those reports and identified areas of potential changes in ground-water quality due to increased development.

Thirty-three wells that were sampled prior to 1970 were resampled during this study to document any water-quality changes that may have occurred (table 13). Of the thirty-three wells resampled, water from only five had a greater than 10-percent increase in dissolved solids. Water from one well, (B-7-2)10dbd-1, had a large decrease in dissolved solids; water from another, (B-4-3)19cca-1, had large fluctuations in dissolved solids; and water from another, (B-7-3)31aac-2, had little or no change in dissolved-solids concentration, but did reflect a change in the chemical type. Because vertical stratification of water with different chemical types exists in the East Shore area, changes in chemistry of water produced by a given well may be a result of fluctuating proportions of water of different chemical types entering the well as a result of changes in the discharge rate or an increase in recharge. Change in chemical type of water probably does not reflect a widespread regional change in water chemistry.

The water from well (B-4-1)6adc-1, on Hill Air Force Base about 1 mile east of Clearfield, is a calcium bicarbonate type that has shown a greater than 10-percent increase in dissolved-solids concentration since 1967 (table 13). Bolke and Waddell (1972, p. 20) suggested that similiar changes in a nearby well were apparently due to different proportions of water being contributed by two zones within the deeper parts of the aquifer system. In those two zones, dissolved solids generally increase with depth; therefore, during periods of large withdrawals, a relatively larger amount of water is apparently contributed by the deeper zone. Even though some changes have occurred in the area near Hill Air Force Base, a degradation of the regional water quality due to increased withdrawals probably has not occurred.

The dissolved-solids concentration in water from well (B-6-1)29cbb-1 (table 13), which is a sodium chloride type (fig. 44), has increased more than 35 percent since 1960. In addition, the water temperature has decreased from 24 to 15.5 degrees Celsius. Even with the large increase in dissolved solids, the calcium concentration actually decreased, whereas the sodium, potassium, and chloride concentrations increased by more than 45 percent. A map by Bolke and Waddell (1972, pl. 3) indicates that the well is near a boundary between mixed and sodium chloride type water. Since the well was completed, it is possible that the lower temperature, sodium chloride water has migrated toward the well.

Table 13.--Chemical analyses of water from selected wells sampled before 1970 and after 1980

Location: See text for explanation of numbering system for wells.
Units: DEG C, degrees Celsius; µS/cm, microsiemens per centimeter at 25° Celsius; mg/L, milligrams per liter; Sodium: T, value is total of sodium plus potassium; Alkalinity: *, value converted from bicarbonate; Solids: R, value as dissolved solids residue at 180 °C.
Analyses for additional samples for some of these wells are in Plantz and others (1986), table 5.

Location	Date of sample	Specific conductance (µS/cm	Temperature (DEG C)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Solids, sum of constituents, dissolved (mg/L)	Hardness (mg/L as $CaCO_3$)
(A-2-1) 7aba-4	09-08-47	338	17.0	30	7.9	23 T	--	114	16	18	189	--
	12-12-58	271	17.0	17	7.3	32 T	--	107	11	14	169	--
	10-15-64	264	18.0	16	7.9	31 T	--	105	12	14	162 R	--
	08-05-82	265	16.0	20	8.3	31	1.6	103	18	15	180	84
(B-1-1)10aac-1	12-20-65	3,080	15.5	51	17	577 T	--	351 *	1.2	780	1,700	200
	11-13-68	2,920	16.0	45	20	570 T	--	355 *	6.2	760	1,700	190
	07-31-84	2,860	16.0	48	16	530	28	372	7.3	750	1,700	190
(B-2-1)13aab-1	05-09-47	380	--	12	3.5	80 T	--	168 *	15	30	260	44
	10-10-58	395	15.5	9.6	2.9	80 T	--	157 *	9.5	30	250	36
	05-05-69	395	15.0	9.6	1.9	80 T	--	158 *	8.2	28	240	32
	08-31-84	400	16.0	9.7	2.5	76	.70	160	6.0	26	240	35
24bad-3	08-12-74	470	16.0	28	6.5	64	1.0	--	21	--	280	97
	08-17-84	490	16.5	35	7.6	63	.90	169	26	30	280	120
(B-3-1) 5dda-1	11-14-68	300	24.0	25	7.3	32 T	--	131 *	3.2	18	200	92
	08-31-84	305	18.0	28	5.5	30	2.6	139	2.5	14	200	93
15bac-1	09-09-69	395	24.0	30	3.4	60 T	--	190 *	4.1	20	250	89
	08-04-81	320	20.5	29	3.6	59	2.2	180	1.0	17	250	87
25dab-1	08-20-68	1,320	18.0	65	17	180	2.3	176 *	1.0	320	700	230
	08-31-84	1,360	16.0	60	15	180	2.2	190	3.5	310	710	210
(B-4-1) 6adc-1	01-04-56	470	11.0	43	15	33	6.7	--	1.5	21	280	170
	05-10-60	475	12.5	45	14	36	6.0	--	2.1	20	280	170
	07-10-67	450	17.5	48	11	40 T	--	--	2.0	22	270	170
	09-19-84	565	12.5	50	17	44	7.1	264	1.0	24	320	190
8dcd-1	09-06-61	385	--	47	12	17	1.6	162 *	21	15	225 R	170
	08-22-84	370	14.0	49	11	15	1.3	158	16	13	220	170
(B-4-2)27aba-1	05-05-69	630	15.0	14	4.4	130	5.4	324 *	1.5	48	390	53
	08-02-77	600	13.5	15	4.5	130	5.8	--	6.8	48	410	56
	08-15-84	650	14.0	13	4.4	130	5.7	276	5.6	45	400	51
(B-4-3)19cca-1	08-04-69	1,180	24.0	46	25	160	4.4	156 *	8.8	290	660 R	220
	08-05-70	1,800	24.0	68	21	360	--	--	24	620	1,200	260
	08-02-77	1,150	23.5	48	11	170	5.0	--	11	290	660	170
	08-04-80	1,240	22.0	47	12	190	6.0	--	8.2	310	710	170
(B-5-1)17ddd-1	12-19-62	475	--	54	17	19	2.7	197 *	20	24	238 R	200
	09-12-84	515	21.0	56	17	20	2.9	218	22	21	290	210
20ddd-2	01-03-62	485	15.0	80	16	17	1.2	245 *	27	18	274 R	270
	08-22-84	520	14.5	64	16	17	2.0	213	24	20	280	230

Table 13.--Chemical analyses of water from selected wells sampled before 1970 and after 1980—Continued

Location	Date of sample	Specific conductance (µS/cm	Temperature (DEG C)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Solids, sum of constituents, dissolved (mg/L)	Hardness (mg/L as $CaCO_3$)
(B-5-1)29bdb-3	04-09-43	520	--	70	19	21	2.1	236 *	28	21	320	250
	04-14-52	560	11.5	73	19	20	1.7	242 *	30	18	320	260
	05-09-60	530	12.0	74	16	19	1.8	230 *	37	16	320	250
	07-24-69	540	16.0	71	27	--	--	234 *	31	20	300	290
	09-19-84	575	11.0	70	18	17	1.9	231	28	20	310	250
29bdc-1	04-14-52	600	11.5	76	20	24	2.6	262 *	36	20	350	270
	05-09-60	550	12.0	75	18	20	2.5	242 *	36	17	320	260
	07-25-69	580	18.0	77	21	18 T	--	363 *	34	12	330	280
	09-19-84	600	11.0	71	19	21	2.2	252	26	20	320	260
(B-5-2)30ada-1	06-19-50	580	12.0	75	19	23	1.3	260 *	33	20	340	270
	05-10-60	580	12.0	78	18	23	2.1	257 *	36	18	340	270
	07-18-68	540	14.0	65	22	22 T	--	235 *	32	18	320	250
	09-19-84	570	11.5	70	18	19	2.1	234	27	18	310	250
(B-5-2) 6bdd-3	08-29-68	360	19.0	36	9.7	23	3.1	156 *	8.2	18	210	130
	08-02-77	360	17.0	36	11	20	2.3	--	13	16	210	140
	08-15-84	380	17.5	42	11	22	2.5	156	15	12	220	150
6bdd-4	09-09-69	445	16.0	--	--	--	--	215 *	--	18	--	--
	08-02-77	450	14.5	36	15	37	7.8	--	5.2	18	280	150
	08-15-84	470	18.0	38	14	36	7.7	221	1.5	15	260	150
21ddd-1	11-18-68	1,090	12.0	46	49	130 T	--	429 *	1.8	110	640	320
	08-15-84	1,000	14.5	47	44	110	20	451	2.1	85	610	300
(B-5-3)15dda-1	05-14-69	380	24.0	--	--	--	--	134 *	--	29	--	84
	08-15-84	395	23.5	21	6.5	55	3.5	166	.9	22	220	140
25dcd-1	05-14-69	365	15.0	--	--	--	--	103 *	--	22	--	140
	08-15-84	390	16.0	36	11	29	1.6	180	.8	14	220	140
(B-6-1) 4bbd-5	11-22-67	245	--	28	8.0	14	1.2	117 *	5.3	7.8	140 R	100
	08-29-84	255	18.5	27	9.0	14	1.2	119	7.7	6.2	150	100
6caa-1	04-14-43	260	--	32	10	14 T	--	130 *	4.0	6.0	--	120
	02-24-56	275	--	32	10	11	2.3	128 *	5.8	9.6	180	120
	11-17-59	270	15.5	32	8.8	14 T	--	131 *	6.0	5.5	160	120
	10-16-64	265	15.0	31	9.1	15 T	--	131 *	5.4	6.6	170	110
	09-05-84	280	14.5	33	9.3	11	2.5	134	5.1	5.0	170	120
29cbb-1	12-27-60	3,150	24.0	96	31	480	41	127 *	8.2	900	1,760 R	370
	09-05-84	4,390	15.5	74	29	740	60	119	3.0	1,400	2,400	300
(B-6-2) 5acb-2	03-04-54	510	--	17	5.2	90	2.3	222 *	1.4	30	300	64
	11-04-59	495	15.5	19	5.8	89 T	--	223 *	2.3	28	300	71
	10-19-64	475	19.5	17	6.1	94 T	--	226 *	3.1	30	310	68
	09-05-84	495	16.5	19	4.8	86	3.0	226	1.8	27	300	67
(B-6-3) 4dab-1	10-09-68	820	21.0	4.0	3.4	200	4.8	411 *	4.2	28	520	24
	08-16-84	800	21.0	3.9	1.7	200	4.9	401	<.2	27	--	17

Table 13.--Chemical analyses of water from selected wells sampled before 1970 and after 1980—Continued

Location	Date of sample	Specific conductance (µS/cm	Temperature (DEG C)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Solids, sum of constituents, dissolved (mg/L)	Hardness (mg/L as $CaCO_3$)	Hardness (mg/L as $CaCO_3$)
(7-2) 2cba-5	09-09-69	234	14.0	17	3.9	32 T	--	116 *	0.5	7.2	140	59	250
	08-09-77	340	13.0	50	6.6	11	1.1	--	12	14	200	150	260
	08-05-80	460	15.5	52	11	16	2.8	--	16	14	230	180	250
	08-14-84	420	13.5	58	9.2	11	1.4	159	17	18	220	180	290
10dbd-1	11-20-68	1,480	24.0	75	10	216 T	--	138 *	8.5	390	800	230	250
	08-21-84	360	23.5	10	1.0	65	3.2	109	8.0	41	210	29	
16dcd-2	05-07-69	335	25.0	21	4.4	49	6.8	158 *	4.5	10	220	71	270
	08-10-79	340	26.5	20	3.7	51	7.1	--	7.4	7.9	220	65	260
	08-14-84	355	27.0	21	4.0	49	7.1	165	3.9	8.0	220	69	280
20daa-1	03-04-54	1,290	13.5	12	9.6	240	34	342 *	1.2	210	730	69	260
	10-19-64	1,240	13.5	10	9.7	269 T	--	340 *	1.6	220	740	65	270
	08-14-84	1,360	15.0	10	7.9	250	36	336	4.8	220	760	58	250
32bbb-1	11-20-68	2,360	18.0	66	45	335 T	--	105 *	1.5	680	1,200	350	320
	08-03-77	2,350	19.0	76	41	310	23	--	1.7	690	1,300	360	310
	08-14-84	2,450	19.0	73	41	330	22	140	1.1	690	1,300	350	
(7-3)31aac-2	09-10-69	1,490	38.0	27	5.4	320	--	468 *	.5	230	930	90	--
	08-06-80	1,730	39.5	57	9.3	290	23	260	2.9	420	1,000	170	220
(8-2)26bcd-1	09-09-69	420	13.0	59	14	13 T	--	190 *	33	7.7	250	200	140 R
	08-14-84	490	13.0	62	18	7.8	2.1	197	36	9.6	270	230	150

The total discharge calculated for 48 miles of lake shore is estimated to be 57,000 acre-feet per year. Discharge by drains near the lake and west of line segment line 3 (fig. 41) is estimated to range from 3,000 to 5,000 acre-feet per year and was subtracted from the total discharge by diffuse seepage to Great Salt Lake. Excluding the drain discharge (3,000-5,000 acre-feet) and ground-water flow to the east across line segment line 5 (1,600 acre-feet), the discharge from the East Shore aquifer system by diffuse seepage to the lake is estimated to be about 50,000 acre-feet per year (table 10).

Summary of the Hydrologic Budget for the East Shore Aquifer System

The hydrologic budget of the East Shore aquifer system is summarized in table 11. The budget components for recharge and discharge were calculated independently, and the totals are not equal. The difference between the totals for recharge and discharge primarily is due to lack of reliable data for calculating some of the individual budget components, particularly recharge from subsurface inflow, discharge to drainageways and springs, and diffuse seepage to Great Salt Lake, which are major parts of the total budget. However, it is likely that the discharge from the East Shore aquifer system was slightly larger than recharge during 1969-84 because a small part of the discharge from wells was derived from loss of aquifer storage rather than being entirely derived from recharge. Another source of discrepancy was the time periods during which data to calculate individual parts of the budget were collected. The value for each component of the budget is assumed to be an average value during 1969-84. However, data were not available for all components for the same time period, and the average values represent different periods of time and may represent hydrologic extremes. For instance, discharge to drainageways and springs was calculated based on data collected during 1984-85, a period following greater than normal precipitation; the calculated value may be larger than actual average value for 1969-84. A reasonable estimate of the long-term average for both recharge to and discharge from the East Shore aquifer system is about 160,000 acre-feet per year.

Chemical Quality and Temperature

The quality of ground water in the East Shore area has changed little since previous studies even though withdrawals have increased substantially. Chemical analyses of water from wells collected during this study and selected analyses from other studies are reported in Plantz and others (1986, table 5). Smith and Gates (1963) and Bolke and Waddell (1972) discussed the chemical quality of ground water in the entire area, whereas Feth and others (1966) discussed the quality of water in only the Weber Delta area. Additional information on the prevalent chemical types of ground water in the area can be found in those reports. Chemical analyses of ground water in the area indicates that in most of the area the water is potable; however, some areas are not extensively developed because the quality of the water is not suitable for some uses.

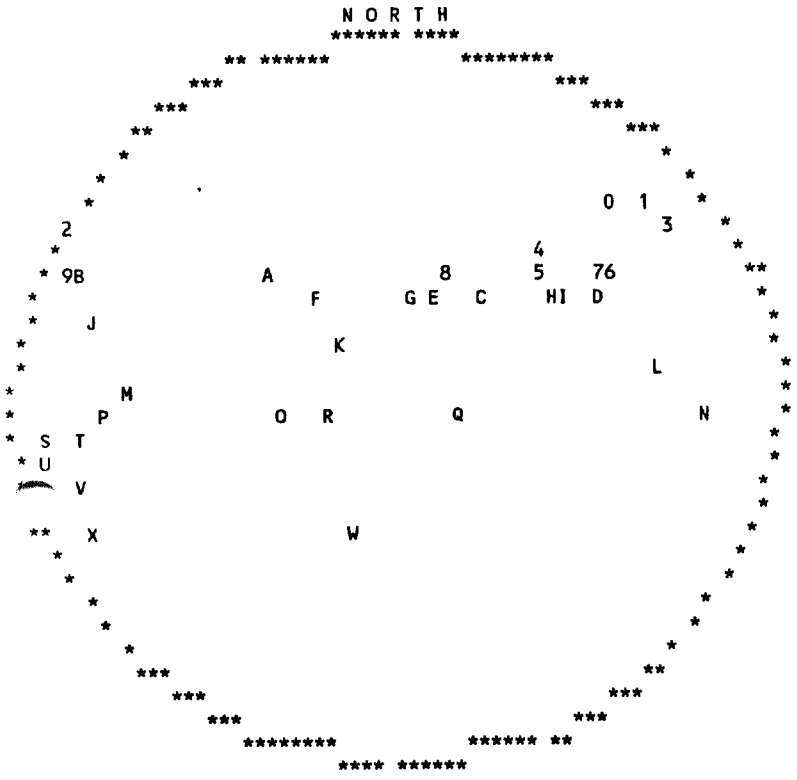
Appendix J

Underground

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED FRI, MAY 9, 2003, 1:04 PM
PLOT SHOWS LOCATION OF 34 POINTS OF DIVERSION

PLOT OF AN AREA WITH A RADIUS OF 4000 FEET FROM A POINT
N 1300 FEET, E 660 FEET OF THE W4 CORNER,
SECTION 1 TOWNSHIP 5N RANGE 2W SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 2000 FEET



UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR	AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER	DEPTH	YEAR LOG	POINT OF DIVERSION DESCRIPTION NORTH		EAST		CNR	SEC	TWN	RNG	B&M	U N	A P	P E	T R	S U	U G	P R	R E D
0	35 3047	.0090		.00	12	10		N	902	E	2882	SW	36	6N	2W	SL		X		X				
	WATER USE(S): DOMESTIC											PRIORITY DATE:			/ /1906									
	Call, A. C.															UT								
1	35 3065	.1340		.00	Underground Water Well			N	809	E	3191	SW	36	6N	2W	SL		X		X				
	WATER USE(S): IRRIGATION STOCKWATERING											PRIORITY DATE:			/ /1922									
	Call, A. C.				765 West 24th Street								Ogden			UT								
2	35 5013	.0150		.00	2	122		N	702	W	40	S4	35	6N	2W	SL		X		X				
	WATER USE(S): IRRIGATION DOMESTIC											PRIORITY DATE: 06/23/1978												
	Miller, Jimmy W.				3548 Midland Drive								Roy			UT 84067								
3	35 3063	.1340		.00	Underground Water Drain			N	642	E	3416	SW	36	6N	2W	SL		X		X				
	WATER USE(S): IRRIGATION											PRIORITY DATE: 02/00/1922												
	Sessions, Austin												Roy			UT								
4	35 3046	.2230		.00	Underground Water Drain			N	285	E	2076	SW	36	6N	2W	SL		X		X				
	WATER USE(S): IRRIGATION											PRIORITY DATE:			/ /1922									
	Call, A. C.				765 West 24th Street								Ogden			UT								
5	35 1929	1.0000		.00	Underground Water Drain					E	2146	NW	1	5N	2W	SL		X		X				
	WATER USE(S): IRRIGATION STOCKWATERING											PRIORITY DATE: 00/00/1900												
	Bouwhuis, Jesse and Christian				R.F.D. #1								Roy			UT 84067								
6	35 3062	.0090		.00	10	15		N	161	E	2838	SW	36	6N	2W	SL		X		X				
	WATER USE(S): DOMESTIC											PRIORITY DATE:			/ /1900									
	Sessions, Austin												Roy			UT								
7	35 3844	.0110		.00	Drain			S	36	W	2505	NE	1	5N	2W	SL		X		X				
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING											PRIORITY DATE:			/ /1932									
	Devlin, George D.				179 28th Street								Ogden			UT								
8	35 2009	.0560		.00	30	12		N	152	E	1206	SW	36	6N	2W	SL		X		X				
	WATER USE(S): DOMESTIC STOCKWATERING											PRIORITY DATE: 03/00/1905												
	Bouwhuis, Jesse				R.F.D. #1								Roy			UT 84067								
9	35 3066	.0040		.00	4			N	98	W	2744	SE	35	6N	2W	SL		X		X				
	WATER USE(S): DOMESTIC STOCKWATERING											PRIORITY DATE:			/ /1914									
	Johnson, David H.				RFD #1								Ogden			UT								
A	35 1306	.2670		.00	Underground Water Drain					W	650	SE	35	6N	2W	SL		X		X				
	WATER USE(S): IRRIGATION STOCKWATERING											PRIORITY DATE: 07/28/1961												
	Bouwhuis, Paul				2164 West 3300 South Route #1								Ogden			UT 84401								
B	35 4580	.0020		.00	2	126	1972 Y			E	78	N4	2	5N	2W	SL		X		X				
	WATER USE(S): STOCKWATERING											PRIORITY DATE: 09/15/1971												
	Bingham, Elmont L.				731 BelMar Drive								Ogden			UT 84403								
C	35 4522	.2000		.00	Underground Water Drain			S	60	E	1450	NW	1	5N	2W	SL		X		X				
	WATER USE(S): IRRIGATION STOCKWATERING											PRIORITY DATE: 00/00/1913												
	Bouwhuis, Marie D.				1718 West 3300 South								Roy			UT 84067								
D	35 790	.0150		.00	4	59	1955 Y	S	60	W	2600	NE	1	5N	2W	SL		X		X				
	WATER USE(S): DOMESTIC											PRIORITY DATE: 05/23/1955												
	Bartlett, Walter G.				RFD #1, Box 321								Ogden			UT								
E	35 4522	.2000		.00	Underground Water Drain			S	70	E	1050	NW	1	5N	2W	SL		X		X				
	WATER USE(S): IRRIGATION STOCKWATERING											PRIORITY DATE: 00/00/1913												
	Bouwhuis, Marie D.				1718 West 3300 South								Roy			UT 84067								
F	35 2602	.1110		.00	Underground Water Drain			S	75	W	192	NE	2	5N	2W	SL		X		X				
	WATER USE(S): IRRIGATION STOCKWATERING											PRIORITY DATE: 00/00/1913												
	Bouwhuis, Chris				R.F.D. #1								Roy			UT 84067								

UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY CFS	QUANTITY AND/OR	QUANTITY AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER	DEPTH	YEAR LOG	POINT OF DIVERSION DESCRIPTION NORTH	EAST	CNR	SEC	TWN	RNG	B&M	U N	A P	P E	T R	S U	U G	P W	R T	E P	D
G	35 4522	.2000		.00	Underground Water Drain			S 80	E 750	NW	1	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION STOCKWATERING																							
	Bouwhuis, Marie D.				1718 West 3300 South																			
H	35 2008	.0450		.00	6	17		S 100	E 2182	NW	1	5N	2W	SL			X				X			
	WATER USE(S): DOMESTIC																							
	Tenbrink, Sindy May				Route #1, Box #376																			
I	35 4525	.0150		.00	36	12		S 130	W 258	N4	1	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING																							
	Tenbrink, Sindy May				1509 West 3300 South																			
J	35 3493	.0160		.00	1	30		S 414	W 2518	NE	2	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION STOCKWATERING																							
	Bouwhuis, Chris				Route #1																			
K	35 1930	.1110		.00	Underground Water Drain			S 653		NW	1	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION																							
	Bouwhuis, Jesse				R.F.D. #1																			
L	35 650	.0150		.00	4	56		S 825	E 640	N4	1	5N	2W	SL			X				X			
	WATER USE(S): DOMESTIC																							
	Bartlett, Walter G. (Mrs.)				RFD 1, Box 321																			
M	35 3157	.0090		.00	1	45		S 1332	W 2126	NE	2	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION STOCKWATERING																							
	Thompson, Charles H.				RFD #1																			
N	35 2879	.0110		.00	48	40	1926 N	S 1374	W 1414	NE	1	5N	2W	SL			X				X			
	WATER USE(S): DOMESTIC STOCKWATERING																							
	Bingham, Arthur S.				RFD #4																			
O	35 2949	.1110		.00	Underground Water Drain			S 1415	W 564	NE	2	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION																							
	Terry, George W.				2459 Globe Mill Street																			
P	35 3158	.0090		.00	2	45		S 1429	W 2323	NE	2	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION DOMESTIC																							
	Thompson, Charles H.				RFD #1																			
Q	35 4825	.2000		.00	8	100 - 400		S 1430	E 1210	NW	1	5N	2W	SL	X						X			
	WATER USE(S): IRRIGATION DOMESTIC OTHER																							
	Murphy, Daniel L.				4461 S. 1720 W.																			
R	35 2950	.0450		.00	Underground Water Drain			S 1595	W 51	NE	2	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION STOCKWATERING																							
	Terry, George W.				2459 Globe Mill Street																			
S	35 4643	.0140		.00	2	126	1973 Y	S 1643	W 383	N4	2	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING																							
	Wilcox, James P. & Claire				3545 South Midland Drive																			
T	35 808	.0150		.00	2	118	1955 Y	S 1685	W 12	N4	2	5N	2W	SL			X				X			
	WATER USE(S): DOMESTIC																							
	Arnold, Ronald T.				3547 Adams																			
U	35 1439	.0454		.00	18	20		N 662	E 2255	W4	2	5N	2W	SL			X				X			
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING																							
	Stokes, Paul G.				3594 Midland Drive																			
V	35 4580	.0020		.00	2	126	1972 Y	S 2215	E 7	N4	2	5N	2W	SL			X				X			
	WATER USE(S): STOCKWATERING																							
	Bingham, Elmont L.				731 BelMar Drive																			

PRIORITY DATE: 00/00/1913 — Roy UT 84067
PRIORITY DATE: 00/00/1920 — Ogden UT 84401
PRIORITY DATE: 06/29/1970 — Ogden UT 84401
PRIORITY DATE: 05/16/1916 — Ogden UT
PRIORITY DATE: 00/00/1914 — Roy UT 84067
PRIORITY DATE: 10/15/1952 — Ogden UT
PRIORITY DATE: / /1924 — Roy UT 84067
PRIORITY DATE: 00/00/1926 — Ogden UT
PRIORITY DATE: 00/00/1922 — Ogden UT
PRIORITY DATE: / /1924 — Roy UT 84067
PRIORITY DATE: 08/16/1976 — Roy UT 84067
PRIORITY DATE: 00/00/1918 — Ogden UT
PRIORITY DATE: 02/08/1973 — Roy UT 84067
PRIORITY DATE: 08/02/1955 — Ogden UT
PRIORITY DATE: 05/02/1963 — Roy UT 84067
PRIORITY DATE: 09/15/1971 — Ogden UT 84403

UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY CFS	QUANTITY AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER	DEPTH	YEAR LOG	POINT OF DIVERSION DESCRIPTION NORTH	EAST	CNR	SEC	TWN	RNG	B&M	U N N	A P P	P E R	T E R	S U R	U G W	P T P	R E D
W	35 3709	.0000	.00	2	75		S 210	E 215	W4	1	5N	2W	SL			X		X			
	WATER USE(S): DOMESTIC STOCKWATERING																			PRIORITY DATE: 00/00/1910	
	Nye, Fred M.				2546 Jefferson						Ogden									UT 84404	
X	35 813	.0150	.00	2	145	1955 Y	S 2885	E 108	N4	2	5N	2W	SL			X		X			
	WATER USE(S): DOMESTIC																			PRIORITY DATE: 08/31/1955	
	Brown, C. R.				Route #1						Roy									UT 84067	

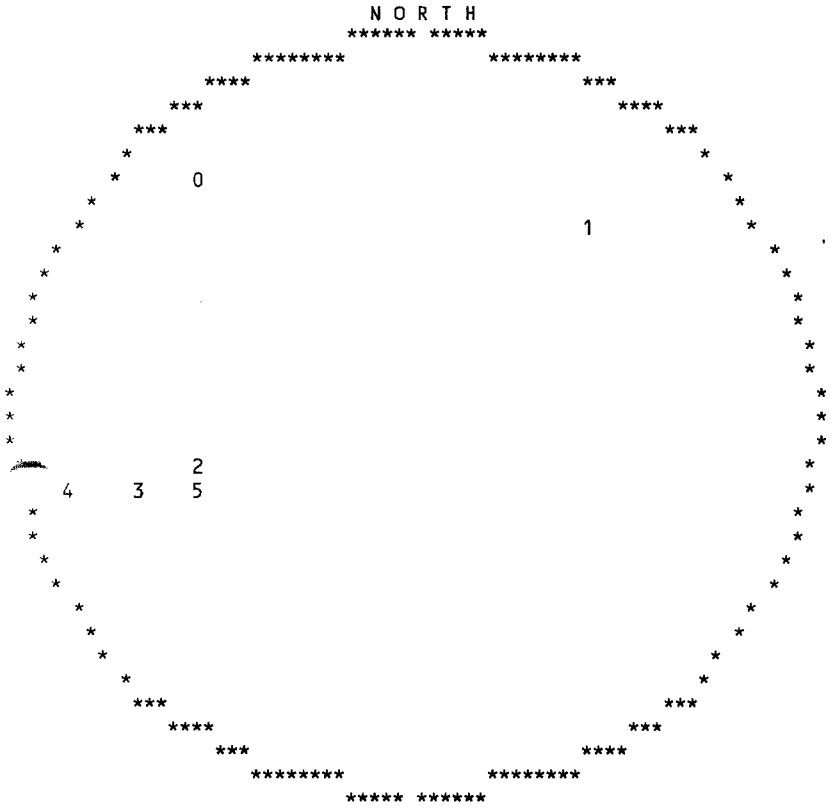
Appendix K

Surface K

UTAH DIVISION OF WATER RIGHTS
WATER RIGHT POINT OF DIVERSION PLOT CREATED FRI, MAY 9, 2003, 1:10 PM
PLOT SHOWS LOCATION OF 8 POINTS OF DIVERSION

PLOT OF AN AREA WITH A RADIUS OF 6280 FEET FROM A POINT
N 1300 FEET, E 660 FEET OF THE W4 CORNER,
SECTION 1 TOWNSHIP 5N RANGE 2W SL BASE AND MERIDIAN

PLOT SCALE IS APPROXIMATELY 1 INCH = 3000 FEET



UTAH DIVISION OF WATER RIGHTS
NWPLAT POINT OF DIVERSION LOCATION PROGRAM

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER	DEPTH	YEAR LOG	POINT OF DIVERSION DESCRIPTION NORTH	EAST	CNR	SEC	TWN	RNG	B&M	U N	A P	P R	T E	S U	U G	P R	T E	R D
0	35 8980	21.0800		.00 Seepage Water					CT	35	6N	2W	SL				X		X			
	WATER USE(S): IRRIGATION																					
	State of Utah Board of Water Resources			1594 West North Temple							Salt Lake City						UT	84116				
1	35 8066	.3800		.00 Sand Ridge Cut			N 1978	W 2066	SE	36	6N	2W	SL				X		X			
	WATER USE(S): OTHER										PRIORITY DATE: 08/10/1906											
	Oregon Short Line Railroad Company			1416 Dodge Street -- Room 1100							Omaha						NE	68179-1100				
2	35 4020	.0800		.00 Drain			N 700	E 2630	W4	2	5N	2W	SL				X		X			
	WATER USE(S): STOCKWATERING										PRIORITY DATE: 08/01/1966											
	Stokes, Clara			3594 Midland Drive							Roy						UT	84067				
3	35 4243	.0800		.00 Unnamed Drain			N 220	E 1625	W4	2	5N	2W	SL				X		X			
	WATER USE(S): IRRIGATION STOCKWATERING										PRIORITY DATE: 05/26/1967											
	Stokes, Clara			3594 Midland Drive							Roy						UT	84067				
4	35 1903	.0915		.00 Unnamed Drain			N 40	E 655	W4	2	5N	2W	SL				X		X			
	WATER USE(S): IRRIGATION STOCKWATERING										PRIORITY DATE: 06/07/1965											
	Anderson, Jay J.			3530 South 2700 West							Roy						UT	84067				
4	a8575	.0915		.00 Unnamed Drain			N 40	E 655	W4	2	5N	2W	SL				X		X			
	WATER USE(S): IRRIGATION STOCKWATERING										PRIORITY DATE: 09/02/1975											
	Anderson, Jay J.			3530 South 2700 West							Roy						UT	84067				
4	a7374	.0915		.00 Unnamed Drain			N 40	E 655	W4	2	5N	2W	SL				X		X			
	WATER USE(S): IRRIGATION STOCKWATERING										PRIORITY DATE: 04/10/1973											
	Anderson, Jay J.			3530 South 2700 West							Roy						UT	84067				
5	35 4020	.0800		.00 Drain			N 15	E 2630	W4	2	5N	2W	SL				X		X			
	WATER USE(S): STOCKWATERING										PRIORITY DATE: 08/01/1966											
	Stokes, Clara			3594 Midland Drive							Roy						UT	84067				

Appendix L

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

Michael O. Leavitt
Governor
Robert L. Morgan
Executive Director
Kevin Conway
Division Director

Northern Region
515 East 5300 South
Ogden, Utah 84405-4502
(801) 476-2740 telephone
(801) 479-4010 fax
www.nr.utah.gov

July 30, 2003

Brent Warren
2150 West 3300 South Suite B
Ogden, Utah 84401

Subject: Proposed Development of 53.33 acres in Weber County, Utah.

Dear Mr. Warren:

The Utah Division of Wildlife Resources (UDWR) has reviewed the proposed housing development in Ogden, Utah. The 53.33-acre site is in a highly disturbed urban setting consisting of an abandon gravel pit and some fallow agriculture fields. After reviewing the project proposal we do not foresee any significant impacts to wildlife.

If you have any questions or would like additional information from the UDWR please contact David Hernandez (801) 710-7324 of the Northern Region Habitat Program.

Sincerely,

Bob Hasenyager
Regional Supervisor

Appendix M

State of Utah

MICHAEL O. LEAVITT
Governor

OLENE S. WALKER
Lieutenant Governor

Department of Community and Economic Development
DAVID HARMER
Executive Director

Division of State History / Utah State Historical Society
PHILIP F. NOTARIANNI
Division Director

m

July 2, 2003

Brent Warren
2150 West 3300 South, Suite B
Ogden UT 84401

RE: Land Development in Weber County

In Reply Please Refer to Case No. 03-1222

Dear Mr. Warren:

The Utah State Historic Preservation Office has reviewed our cultural resource files for the requested area of potential effect. After consideration of the area of potential effect and the nature of undertaking, USHPO recommends a determination of No Potential to Effect cultural resources.

This information is provided to assist in identifying historic properties, per §36CFR800 for Section 106 consultation procedures. If you have questions, please contact me at (801) 533-3555. My email address is: jdykman@utah.gov

As ever,

James L. Dykmann
Deputy State Historic
Preservation Officer - Archaeology

JLD:03-1222 OR

Appendix N

N

New Image Home Improvements
2150 West 3300 South
Ogden, Utah 84401

June 24, 2003

Anna Sutton
United States Core of Engineers
Licensing Division
Bountiful Office

Re: Request for Jurisdictional Determination. (See attached land description)

Dear Anna:
This letter is to furnish the information you requested as per our last conversation a jurisdictional determination concerning land we intend to develop in Weber County. The land identification information is attached. Thank you for your help in this matter.
Please send information to address below.

Thanks,

Brent Warren

Brent warren
2150 West 3300 South Suite B.
Ogden, Utah 84401
801-731-0378
E-mail address: wallyman007 @ networld.com

7/1/03: site inspection w/ Dennis Blinkhorn (COE) and Chris Witt (FWS). some areas have remant willows & cottonwx but no wetlands within parce A, B or C. - ASutton

Based on the information provided
A Department of the Army permit is not required
Project# 200350036

Signed [signature] Date 7/02/03
Utah Regulatory Office

Appendix O

USDA NRCS Natural Resources Conservation Service

2871 S Commerce Way
Ogden, Utah 84401
(801) 629-0580 x32
801-629-0574 (fax)

0

6/30/03

Dear Brent:

This letter is in response to your request concerning the prime, unique, or important farmland impacts by your proposed development in Ogden, UT, NW corner Sec 1, T5N, R2W.

This area is zoned M-1. Therefore, this property is no longer considered farmland. I have enclosed the AD-1006 form with the NRCS portions filled out. The remaining portions will need to be filled out with the federal agency you are currently working with for clearance.

Please call if there are any questions.

Sincerely,

Erin Bell
Area Soil Scientist
Ph: (801) 629-0580 x32
Fax: (801) 257-1930
Email: **Erin.Bell@ut.usda.gov**

Cc: Judy Henline, NRCS Soils Technical Assistant, Salt Lake City, UT

Appendix P

U.S. Department of Transportation

Federal Aviation Administration

Advisory Circular

FAA 7460

Subject: HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS

Date: 5/1/97
Initiated by: AAS-310 and APP-600

AC No: 150/5200-33
Change:

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1. PURPOSE. This advisory circular (AC) provides guidance on locating certain land uses having the potential to attract hazardous wildlife to or in the vicinity of public-use airports. It also provides guidance concerning the placement of new airport development projects (including airport construction, expansion, and renovation) pertaining to aircraft movement in the vicinity of hazardous wildlife attractants. Appendix 1 provides definitions of terms used in this AC.

2. APPLICATION. The standards, practices, and suggestions contained in this AC are recommended by the Federal Aviation Administration (FAA) for use by the operators and sponsors of all public-use airports. In addition, the standards, practices, and suggestions contained in this AC are recommended by the FAA as guidance for land use planners, operators, and developers of projects, facilities, and activities on or near airports.

3. BACKGROUND. Populations of many species of wildlife have increased markedly in the last few years. Some of these species are able to adapt to human-made environments, such as exist on and around airports. The increase in wildlife populations, the use of larger turbine engines, the increased use of twin-engine aircraft, and the increase in air-traffic, all combine to increase the risk, frequency, and potential severity of wildlife-aircraft collisions.

Most public-use airports have large tracts of open, unimproved land that are desirable for added margins of safety and noise mitigation. These areas can present potential hazards to aviation because they often attract hazardous wildlife. During the past century, wildlife-aircraft strikes have resulted in the loss of hundreds of lives world-wide, as well as billions of dollars worth of aircraft damage. Hazardous wildlife attractants near airports could jeopardize future airport expansion because of safety considerations.

DAVID L. BENNETT
Director, Office of Airport Safety and Standards

APPENDIX 1. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR.

1. **GENERAL.** This appendix provides definitions of terms used throughout this AC.

a. Aircraft movement area. The runways, taxiways, and other areas of an airport which are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft exclusive of loading ramps and aircraft parking areas.

b. Airport operator. The operator (private or public) or sponsor of a public use airport.

c. Approach or departure airspace. The airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff.

d. Concurrent use. Aeronautical property used for compatible non-aviation purposes while at the same time serving the primary purpose for which it was acquired; and the use is clearly beneficial to the airport. The concurrent use should generate revenue to be used for airport purposes (see Order 5190.6A, *Airport Compliance Requirements*, sect. 5h).

e. Fly ash. The fine, sand-like residue resulting from the complete incineration of an organic fuel source. Fly ash typically results from the combustion of coal or waste used to operate a power generating plant.

f. Hazardous wildlife. Wildlife species that are commonly associated with wildlife-aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a wildlife-aircraft strike hazard.

g. Piston-use airport. Any airport that would primarily serve FIXED-WING, piston-powered aircraft. Incidental use of the airport by turbine-powered, FIXED-WING aircraft would not affect this designation. However, such aircraft should not be based at the airport.

h. Public-use airport. Any publicly owned airport or a privately-owned airport used or intended to be used for public purposes.

i. Putrescible material. Rotting organic material.

j. Putrescible-waste disposal operation. Landfills, garbage dumps, underwater waste discharges, or similar facilities where activities include processing, burying, storing, or otherwise disposing of putrescible material, trash, and refuse.

k. Runway protection zone (RPZ). An area off the runway end to enhance the protection of people and property on the ground (see AC 150/5300-13). The dimensions of this zone vary with the design aircraft, type of operation, and visibility minimum.

l. Sewage sludge. The de-watered effluent resulting from secondary or tertiary treatment of municipal sewage and/or industrial wastes, including sewage sludge as referenced in U.S. EPA's *Effluent Guidelines and Standards*, 40 C.F.R. Part 401.

m. Shoulder. An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface, support for aircraft running off the pavement, enhanced drainage, and blast protection (see AC 150/5300-13).

n. Turbine-powered aircraft. Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.

o. Turbine-use airport. Any airport that ROUTINELY serves FIXED-WING turbine-powered aircraft.

p. Wastewater treatment facility. Any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes, including Publicly Owned Treatment Works (POTW), as defined by Section 212 of the Federal Water Pollution Control Act (P.L. 92-500) as amended by the Clean Water Act of 1977 (P.L. 95-576) and the Water Quality Act of 1987 (P.L. 100-4). This definition includes any pretreatment involving the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. (See 40 C.F. R. Section 403.3 (o), (p), & (q)).

q. Wildlife. Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring there of (50 CFR 10.12, *Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants*). As used in this AC, WILDLIFE includes feral animals and domestic animals while out of the control of their owners (14 CFR 139.3, *Certification and Operations: Land Airports Serving CAB-Certificated Scheduled Air Carriers Operating Large Aircraft (Other Than Helicopters)*).

r. Wildlife attractants. Any human-made structure, land use practice, or human-made or natural geographic feature, that can attract or sustain hazardous wildlife within the landing or departure airspace, aircraft movement area, loading ramps, or aircraft parking areas of an airport. These attractants can include but are not limited to architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquacultural activities, surface mining, or wetlands.

s. Wildlife hazard. A potential for a damaging aircraft collision with wildlife on or near an airport (14 CFR 139.3).

2. RESERVED.

SECTION 2. LAND USES THAT ARE INCOMPATIBLE WITH SAFE AIRPORT OPERATIONS.

2-1. GENERAL. The wildlife species and the size of the populations attracted to the airport environment are highly variable and may depend on several factors, including land-use practices on or near the airport. It is important to identify those land use practices in the airport area that attract hazardous wildlife. This section discusses land use practices known to threaten aviation safety.

2-2. PUTRESCIBLE-WASTE DISPOSAL OPERATIONS. Putrescible-waste disposal operations are known to attract large numbers of wildlife that are hazardous to aircraft. Because of this, these operations, when located within the separations identified in the sitting criteria in 1-3 are considered incompatible with safe airport operations.

FAA recommends against locating putrescible-waste disposal operations inside the separations identified in the siting criteria mentioned above. FAA also recommends against new airport development projects that would increase the number of aircraft operations or that would accommodate larger or faster aircraft, near putrescible-waste disposal operations located within the separations identified in the siting criteria in 1-3.

2-3. WASTEWATER TREATMENT FACILITIES. Wastewater treatment facilities and associated settling ponds often attract large numbers of wildlife that can pose a threat to aircraft safety when they are located on or near an airport.

a. New wastewater treatment facilities. FAA recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in the siting criteria in 1-3. During the siting analysis for wastewater treatment facilities, the potential to attract hazardous wildlife should be considered if an airport is in the vicinity of a proposed site. Airport operators should voice their opposition to such sitings. In addition, they should consider the existence of wastewater treatment facilities when evaluating proposed sites for new airport development projects and avoid such sites when practicable.

b. Existing wastewater treatment facilities. FAA recommends correcting any wildlife hazards arising from existing wastewater treatment facilities located on or near airports without delay, using appropriate wildlife hazard mitigation techniques. Accordingly, measures to minimize hazardous wildlife attraction should be developed in consultation with a wildlife damage management biologist. FAA recommends that wastewater treatment facility operators incorporate appropriate wildlife hazard mitigation techniques into their operating practices. Airport operators also should encourage those operators to incorporate these mitigation techniques in their operating practices.

c. Artificial marshes. Waste-water treatment facilities may create artificial marshes and use submergent and emergent aquatic vegetation as natural filters. These artificial marshes may be used by some species of flocking birds, such as blackbirds and waterfowl, for breeding or roosting activities. FAA recommends against establishing artificial marshes within the separations identified in the siting criteria stated in 1-3.

d. Wastewater discharge and sludge disposal. FAA recommends against the discharge of wastewater or sludge on airport property. Regular spraying of wastewater or sludge disposal on unpaved areas may improve soil moisture and quality. The resultant turf growth requires more frequent mowing, which in turn may mutilate or flush insects or small animals and produce straw. The maimed or flushed organisms and the straw can attract hazardous wildlife and jeopardize aviation safety. In addition, the improved turf may attract grazing wildlife such as deer and geese.

Problems may also occur when discharges saturate unpaved airport areas. The resultant soft, muddy conditions can severely restrict or prevent emergency vehicles from reaching accident sites in a timely manner.

e. Underwater waste discharges. The underwater discharge of any food waste, e.g., fish processing offal, that could attract scavenging wildlife is not recommended within the separations identified in the siting criteria in 1-3.

2-4. WETLANDS.

a. Wetlands on or near Airports.

(1) Existing Airports. Normally, wetlands are attractive to many wildlife species. Airport operators with wetlands located on or nearby airport property should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations.

(2) Airport Development. When practicable, the FAA recommends siting new airports using the separations identified in the siting criteria in 1-3. Where alternative sites are not practicable or when expanding existing airports in or near wetlands, the wildlife hazards should be evaluated and minimized through a wildlife management plan prepared by a wildlife damage management biologist, in consultation with the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (COE).

NOTE: If questions exist as to whether or not an area would qualify as a wetland, contact the U.S. Army COE, the Natural Resource Conservation Service, or a wetland consultant certified to delineate wetlands.

b. Wetland mitigation. Mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects. Wetland mitigation should be designed so it does not create a wildlife hazard.

(1) FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in the siting criteria in 1-3. Wetland mitigation banks meeting these siting criteria offer an ecologically sound approach to mitigation in these situations.

(2) Exceptions to locating mitigation activities outside the separations identified in the siting criteria in 1-3 may be considered if the affected wetlands provide unique ecological functions, such as critical habitat for threatened or endangered species or ground water recharge. Such mitigation must be compatible with safe airport operations. Enhancing such mitigation areas to attract hazardous wildlife should be avoided. On-site mitigation plans may be reviewed by the FAA to determine compatibility with safe airport operations.

(3) Wetland mitigation projects that are needed to protect unique wetland functions (see 2-4.b.(2)), and that must be located in the siting criteria in 1-3 should be identified and evaluated by a wildlife damage management biologist before implementing the mitigation. A wildlife damage management plan should be developed to reduce the wildlife hazards.

NOTE: AC 150/5000-3, *Address List for Regional Airports Division and Airports District/Field Offices*, provides information on the location of these offices.

2-5. DREDGE SPOIL CONTAINMENT AREAS.

FAA recommends against locating dredge spoil containment areas within the separations identified in the siting criteria in 1-3, if the spoil contains material that would attract hazardous wildlife.

SECTION 3. LAND USES THAT MAY BE COMPATIBLE WITH SAFE AIRPORT OPERATIONS.

3-1. GENERAL. Even though they may, under certain circumstances, attract hazardous wildlife, the land use practices discussed in this section have flexibility regarding their location or operation and may even be under the airport operator's or sponsor's control. In general, the FAA does not consider the activities discussed below as hazardous to aviation if there is no apparent attraction to hazardous wildlife, or wildlife hazard mitigation techniques are implemented to deal effectively with any wildlife hazard that may arise.

3-2. ENCLOSED WASTE FACILITIES. Enclosed trash transfer stations or enclosed waste handling facilities that receive garbage indoors; process it via compaction, incineration, or similar manner; and remove all residue by enclosed vehicles, generally would be compatible, from a wildlife perspective, with safe airport operations, provided they are not located on airport property or within the runway protection zone (RPZ). No putrescible-waste should be handled or stored outside at any time, for any reason, or in a partially enclosed structure accessible to hazardous wildlife.

Partially enclosed operations that accept putrescible-waste are considered to be incompatible with safe airport operations. FAA recommends these operations occur outside the separations identified in the siting criteria in 1-3.

3-3. RECYCLING CENTERS. Recycling centers that accept previously sorted, non-food items such as glass, newspaper, cardboard, or aluminum are, in most cases, not attractive to hazardous wildlife.

3-4. COMPOSTING OPERATIONS ON AIRPORTS. FAA recommends against locating composting operations on airports. However, when they are located on an airport, composting operations should not be located closer than the greater of the following distances: 1,200 feet from any aircraft movement area, loading ramp, or aircraft parking space; or the distance called for by airport design requirements. This spacing is intended to prevent material, personnel, or equipment from penetrating any Obstacle Free Area (OFA), Obstacle Free Zone (OFZ), Threshold Siting Surface (TSS), or Clearway (see AC 150/5300-13, *Airport Design*). On-airport disposal of compost by-products is not recommended for the reasons stated in 2-3.d.

a. Composition of material handled. Components of the compost should never include any municipal solid waste. Non-food waste such as leaves, lawn clippings, branches, and twigs generally are not considered a wildlife attractant. Sewage sludge, wood-chips, and similar material are not municipal solid wastes and may be used as compost bulking agents.

b. Monitoring on-airport composting operations. If composting operations are to be located on airport property, FAA recommends that the airport operator monitor composting operations to ensure that steam or thermal rise does not affect air traffic in any way. Discarded leaf disposal bags or other debris must not be allowed to blow onto any active airport area. Also, the airport operator should reserve the right to stop any operation that creates unsafe, undesirable, or incompatible conditions at the airport.

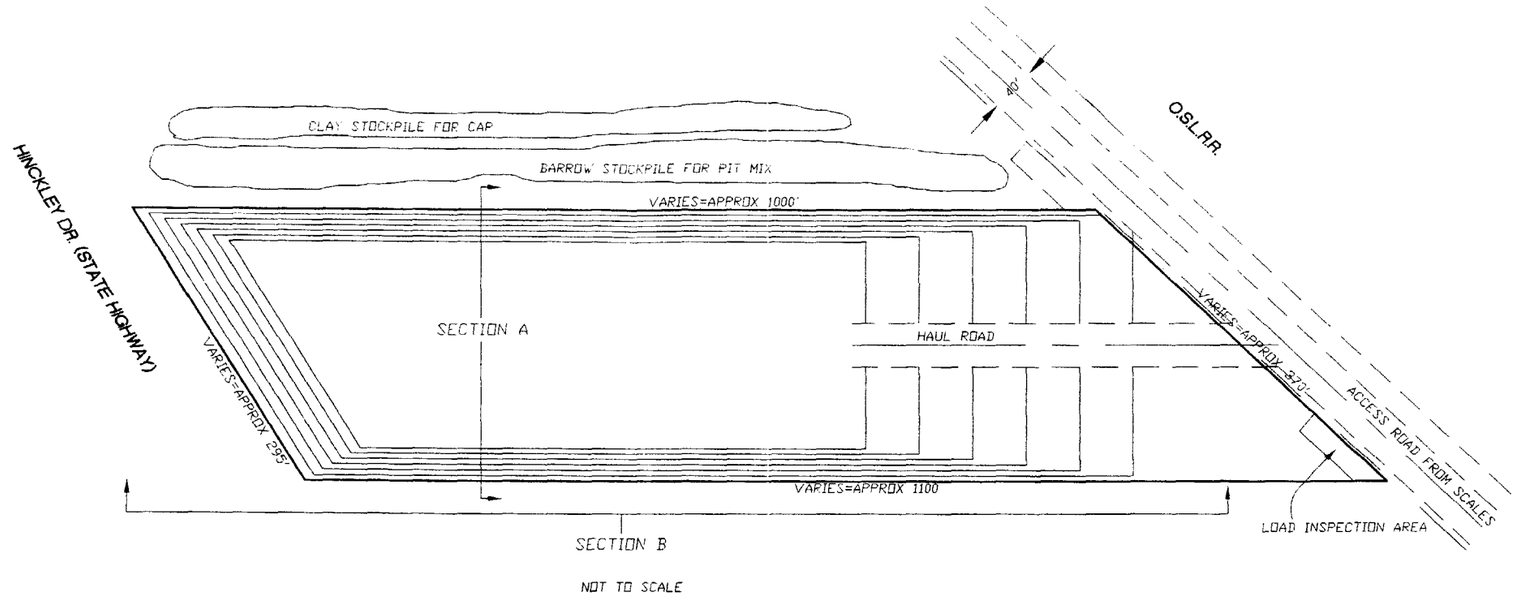
3-5. ASH DISPOSAL. Fly ash from resource recovery facilities that are fired by municipal solid waste, coal, or wood, is generally considered not to be a wildlife attractant because it contains no putrescible matter. FAA generally does not consider landfills accepting only fly ash to be wildlife attractants, if those landfills: are maintained in an orderly manner; admit no putrescible-waste of any kind; and are not co-located with other disposal operations.

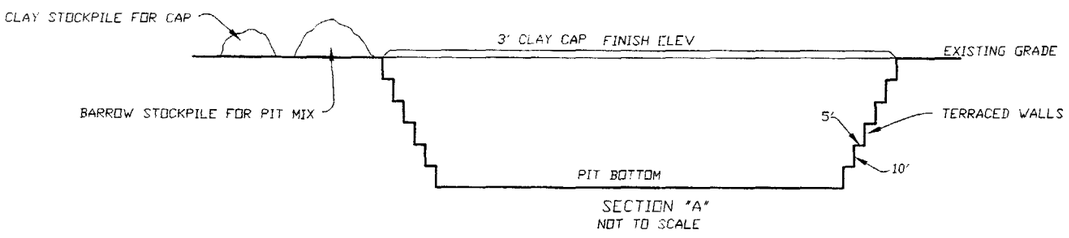
Since varying degrees of waste consumption are associated with general incineration, FAA classifies the ash from general incinerators as a regular waste disposal by-product and, therefore, a hazardous wildlife attractant.

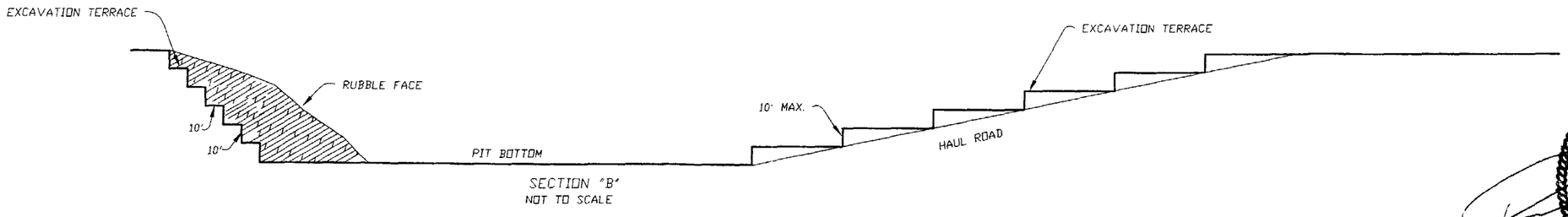
3-6. CONSTRUCTION AND DEMOLITION (C&D) DEBRIS LANDFILLS. C&D debris (Class IV) landfills have visual and operational characteristics similar to putrescible-waste disposal sites. When co-located with putrescible-waste disposal operations, the probability of hazardous wildlife attraction to C&D landfills increases because of the similarities between these disposal activities.

FAA generally does not consider C&D landfills to be hazardous wildlife attractants, if those landfills: are maintained in an orderly manner; admit no putrescible-waste of any kind; and are not co-located with other disposal operations.

Appendix Q







REGISTERED PROFESSIONAL ENGINEER
168431
ROBERT E. BARTON
7-28-03
STATE OF UTAH

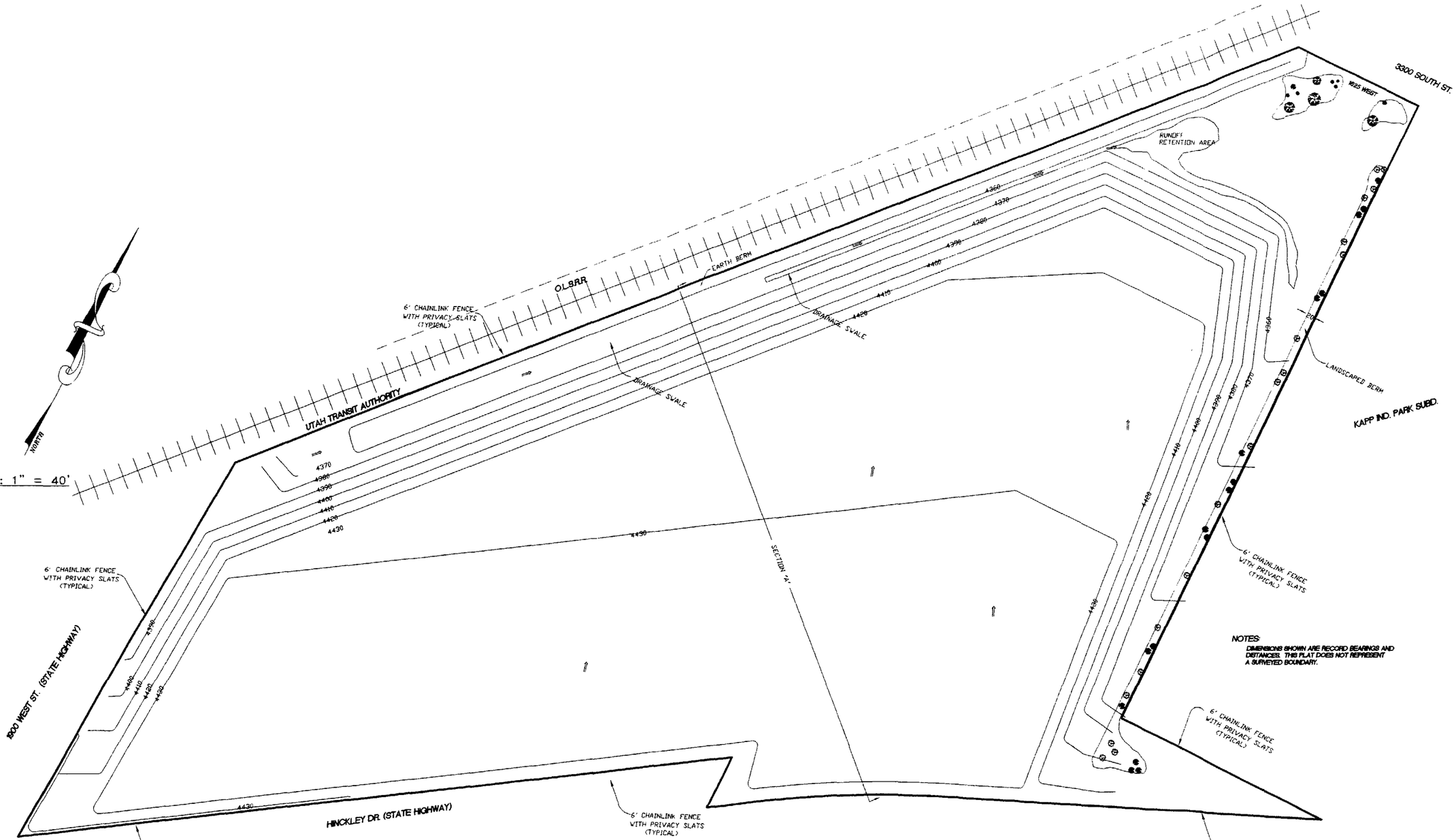
TYPICAL CELL EXCAVATION AND FILL

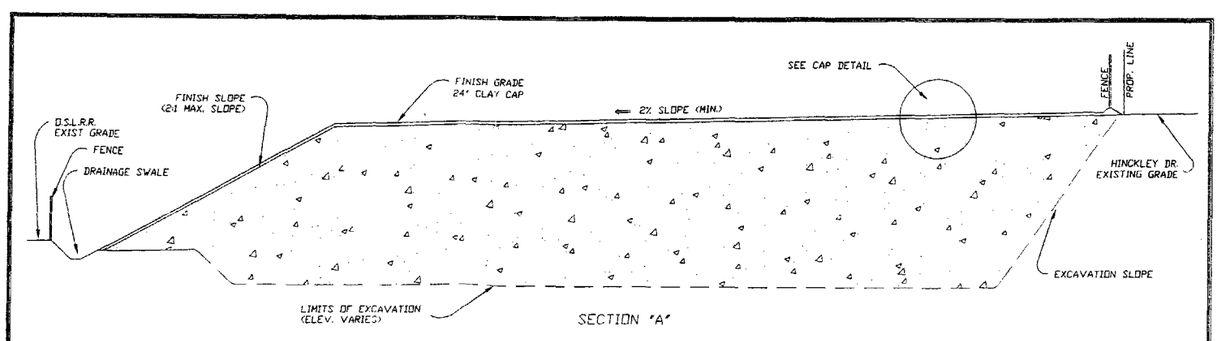
DEVELOPER: BRENT WARREN

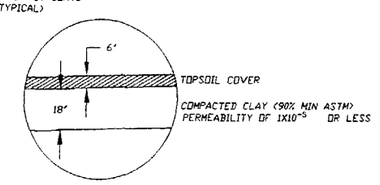
1625 WEST 3300 SOUTH
WEBER COUNTY, UTAH

JOB #2489TYP

LANDMARK SURVEYING INC.
A COMPLETE LAND SURVEYING SERVICE
4646 S. 3500 W. #A-3, WEST HAVEN, UTAH 84401
PHONE 801-731-4075







REGISTERED PROFESSIONAL ENGINEER
168431
ROBERT E. BARTON
7-28-03
STATE OF UTAH

REVISIONS
-25-03 5.)
6.)
7.)
8.)

DRAWN BY: DLG | DATE:
CHECKED BY: | SCALE: AS SHOWN
JOB NO. 2489FLITR

LANDMARK SURVEYING AND ENGINEERING, INC.
A COMPLETE LAND DEVELOPMENT SERVICE
4646 S. 3500 W. #A-3, WEST HAVEN, UTAH 84401
PHONE 801-731-4075

FINISH CONTOUR PLAN

WEBER CONSTRUCTION AND DEMOLITION DEBRIS DISPOSAL SITE

1625 WEST 3300 SOUTH
WEBER COUNTY, UTAH

DEVELOPER: BRENT WARREN

SHEET 1 of 1 SHEETS

Appendix R

Appendix S

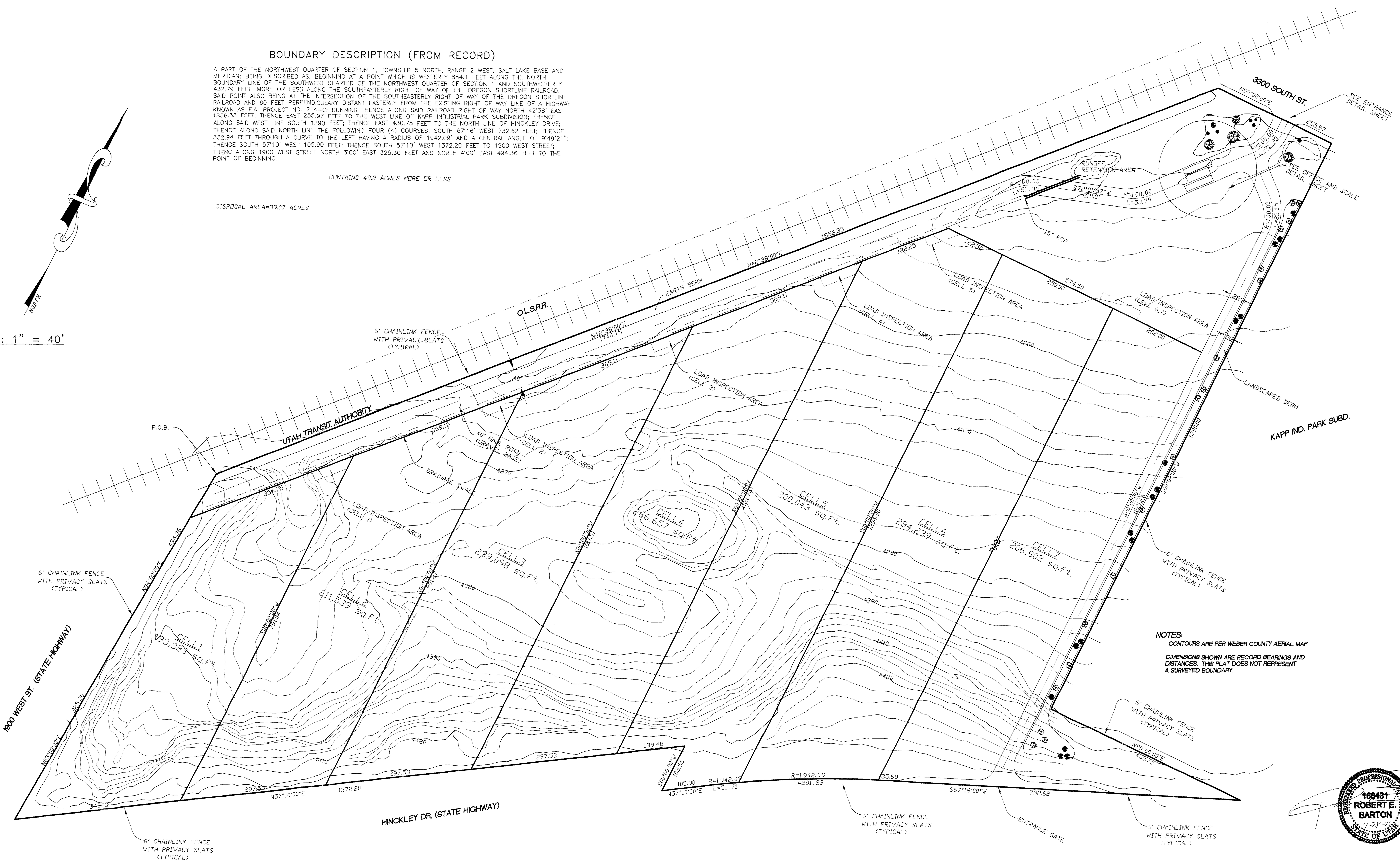
BOUNDARY DESCRIPTION (FROM RECORD)

A PART OF THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 2 WEST, SALT LAKE BASE AND MERIDIAN; BEING DESCRIBED AS: BEGINNING AT A POINT WHICH IS WESTERLY 884.1 FEET ALONG THE NORTH BOUNDARY LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 1 AND SOUTHWESTERLY 432.79 FEET, MORE OR LESS ALONG THE SOUTHEASTERLY RIGHT OF WAY OF THE OREGON SHORTLINE RAILROAD, SAID POINT ALSO BEING AT THE INTERSECTION OF THE SOUTHEASTERLY RIGHT OF WAY OF THE OREGON SHORTLINE RAILROAD AND 60 FEET PERPENDICULARY DISTANT EASTERLY FROM THE EXISTING RIGHT OF WAY LINE OF A HIGHWAY KNOWN AS F.A. PROJECT NO. 214-C: RUNNING THENCE ALONG SAID RAILROAD RIGHT OF WAY NORTH 42°38' EAST 1856.33 FEET; THENCE EAST 255.97 FEET TO THE WEST LINE OF KAPP INDUSTRIAL PARK SUBDIVISION; THENCE ALONG SAID WEST LINE SOUTH 1290 FEET; THENCE EAST 430.75 FEET TO THE NORTH LINE OF HINCKLEY DRIVE; THENCE ALONG SAID NORTH LINE THE FOLLOWING FOUR (4) COURSES; SOUTH 67°16' WEST 732.62 FEET; THENCE 332.94 FEET THROUGH A CURVE TO THE LEFT HAVING A RADIUS OF 1942.09' AND A CENTRAL ANGLE OF 9°49'21"; THENCE SOUTH 57°10' WEST 105.90 FEET; THENCE SOUTH 57°10' WEST 1372.20 FEET TO 1900 WEST STREET; THENC ALONG 1900 WEST STREET NORTH 3°00' EAST 325.30 FEET AND NORTH 4°00' EAST 494.36 FEET TO THE POINT OF BEGINNING.

CONTAINS 49.2 ACRES MORE OR LESS

DISPOSAL AREA=39.07 ACRES

SCALE: 1" = 40'

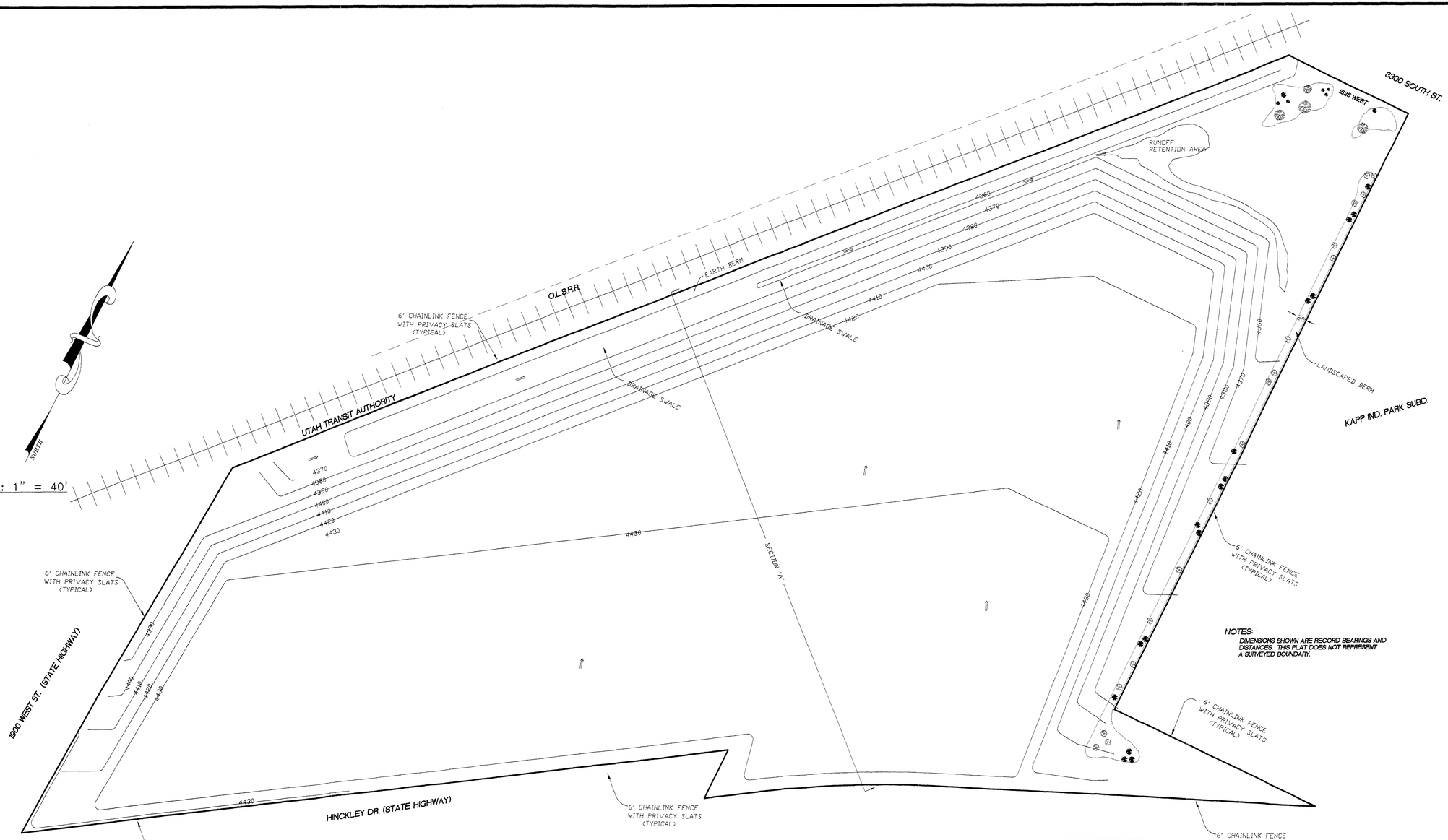


NOTES:
CONTOURS ARE PER WEBER COUNTY AERIAL MAP

DIMENSIONS SHOWN ARE RECORD BEARINGS AND DISTANCES. THIS PLAT DOES NOT REPRESENT A SURVEYED BOUNDARY.

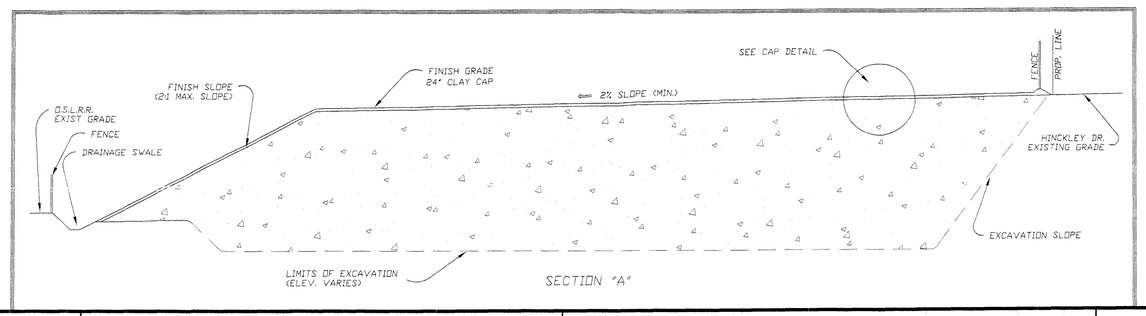
168431 ROBERT E. BARTON STATE OF UTAH

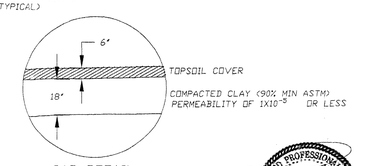
REVISIONS					
1.)	5.)	DRAWN BY: DLG	DATE: 02-18-00	LANDMARK SURVEYING AND ENGINEERING, INC. A COMPLETE LAND DEVELOPMENT SERVICE 4646 S. 3500 W. #A-3, WEST HAVEN, UTAH 84401 PHONE 801-731-4075	CELL LAYOUT AND EXIST CONTOUR PLAN
2.)	6.)	CHECKED BY:	SCALE: AS SHOWN		WEBER CONSTRUCTION AND DEMOLITION DEBRIS DISPOSAL SITE 1625 WEST 3300 SOUTH (ENTRANCE GATE) WEBER COUNTY, UTAH
3.)	7.)	JOB NO. 2489TOPO			DEVELOPER: BRENT WARREN
	8.)				SHEET 1 / 1 SHEETS



NOTES:

DIMENSIONS SHOWN ARE RECORD BEARINGS AND DISTANCES. THIS PLAT DOES NOT REPRESENT A SURVEYED BOUNDARY.





REGISTERED PROFESSIONAL ENGINEER
168431
ROBERT E. BARTON
7-28-03
STATE OF UTAH

REVISIONS
1.) 07-25-03 5.)
2.) 6.)
3.) 7.)
8.)

DRAWN BY: DLG | DATE:
CHECKED BY: | SCALE: AS SHOWN
JOB NO. 2489FUTR

LANDMARK SURVEYING AND ENGINEERING, INC.
A COMPLETE LAND DEVELOPMENT SERVICE
4646 S. 3500 W. #A-3, WEST HAVEN, UTAH 84401
PHONE 801-731-4075

FINISH CONTOUR PLAN

WEBER CONSTRUCTION AND DEMOLITION DEBRIS DISPOSAL SITE

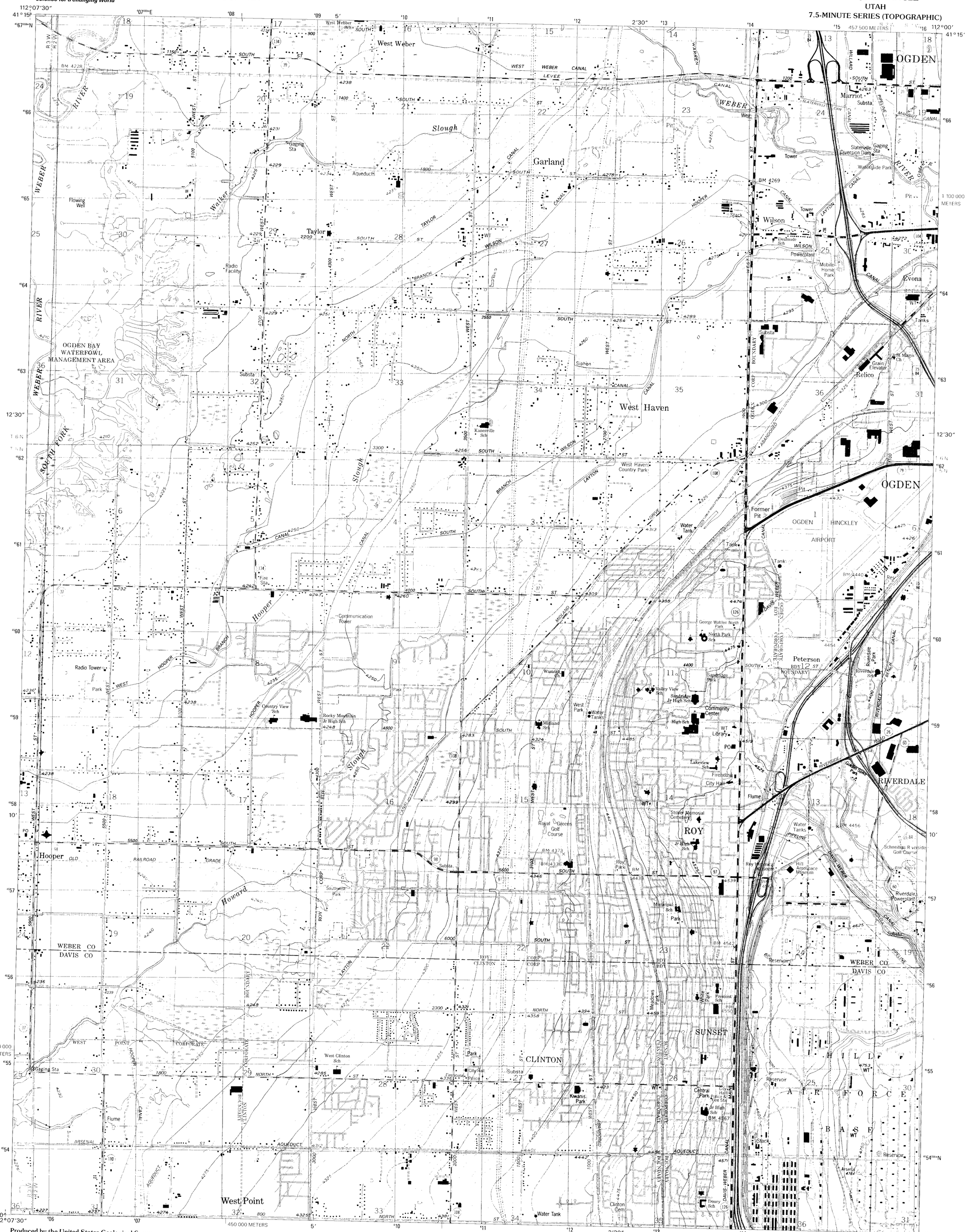
1625 WEST 3300 SOUTH
WEBER COUNTY, UTAH

DEVELOPER: BRENT WARREN

SHEET 1 / 1 SHEETS

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

ROY QUADRANGLE
UTAH
7.5-MINUTE SERIES (TOPOGRAPHIC)



Produced by the United States Geological Survey

Topography compiled 1954. Planimetry derived from imagery taken 1997 and other sources. Major planimetric features revised 1999. Public Land Survey System and survey control current as of 1987. Boundaries current as of 1999

North American Datum of 1983 (NAD 83). Projection and 1 000-meter grid: Universal Transverse Mercator, zone 12
2 500-meter ticks: Utah Coordinate System of 1983 (central zone)

North American Datum of 1927 (NAD 27) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 27 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

Great Salt Lake historic high water elevation from 1873, 1986 and 1987 is shown by dashed blue line at 4212 feet

Areas below 4211 feet were not field checked in 1987

SCALE 1:24 000

UTM GRID AND 2001 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
TO CONVERT FROM FEET TO METERS, MULTIPLY BY .3048

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway hard surface
Secondary highway hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U.S. Route
State Route

INTERIOR - GEOLOGICAL SURVEY, RESTON, VIRGINIA 2001